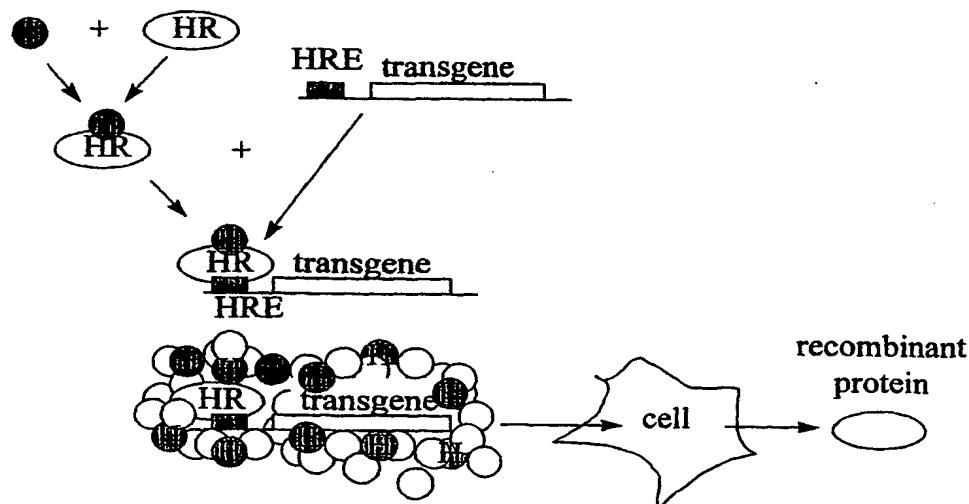




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ :	A1	(11) International Publication Number:	WO 00/49147
C12N 15/12, 15/57, 15/67, 15/85, 9/64, C07K 14/72, C12Q 1/68, A61K 48/00		(43) International Publication Date:	24 August 2000 (24.08.00)
(21) International Application Number: PCT/EP00/01368		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).	
(22) International Filing Date: 18 February 2000 (18.02.00)			
(30) Priority Data: 199 07 099.7 19 February 1999 (19.02.99) DE 60/120,848 19 February 1999 (19.02.99) US			
<p>(71) Applicant (for all designated States except US): THERAGENE BIOMEDICAL LABORATORIES GMBH [DE/DE]; Am Klopferspitz 19, D-82152 Martinsried (DE).</p> <p>(72) Inventor; and</p> <p>(75) Inventor/Applicant (for US only): HAUSER-FUNKE, Charlotte [DE/DE]; Romanstr. 95, D-80369 München (DE).</p> <p>(74) Agents: HELBING, Jörg et al.; von Kreisler Seiting Werner, Deichmannhaus am Dom, D-50667 Köln (DE).</p>			
		<p>Published</p> <p><i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p>	

(54) Title: HORMONE-HORMONE RECEPTOR COMPLEXES AND NUCLEIC ACID CONSTRUCTS AND THEIR USE IN GENE THERAPY



(57) Abstract

The invention relates to the use of a nucleic acid construct comprising at least one hormone responsive element and a transgene for preparing an agent for gene transfer. It further relates to particular nucleic acid constructs comprising at least one hormone responsive element and a transgene, wherein one of said at least one hormone responsive elements is not functionally linked to the transgene, vectors comprising such nucleic acid constructs and compositions of matter comprising such nucleic acid constructs wherein the hormone responsive elements of the constructs are coupled to a hormone-hormone receptor complex. The nucleic acid constructs, plasmids, and compositions of matter of the invention have applications in gene therapy, particularly in the treatment of human blood clotting disorders, such as hemophilia. They may also be used to up- or down-regulate target genes and for the delivery of vaccines.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakhstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		

Fig. 1

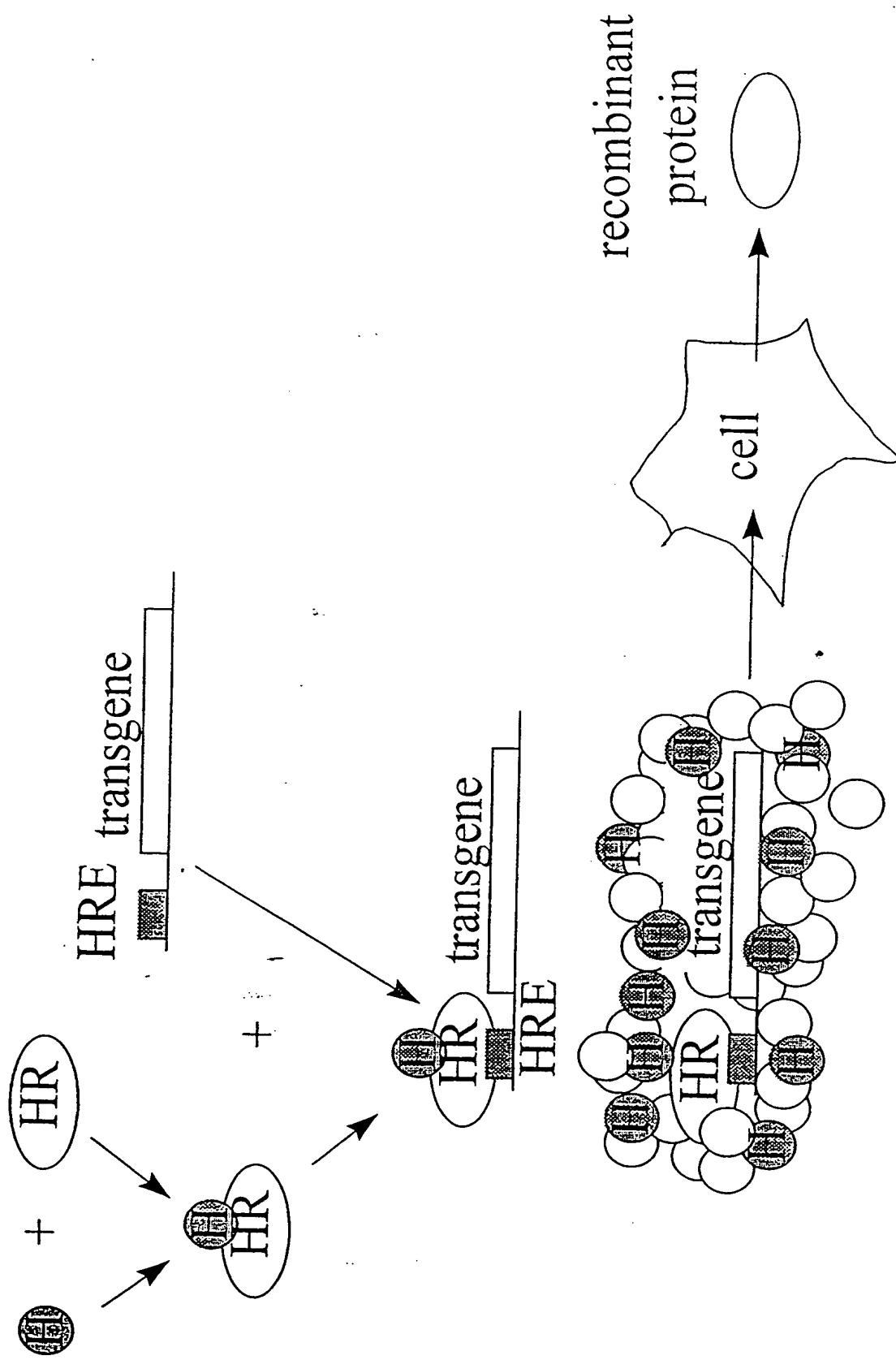


Fig. 2

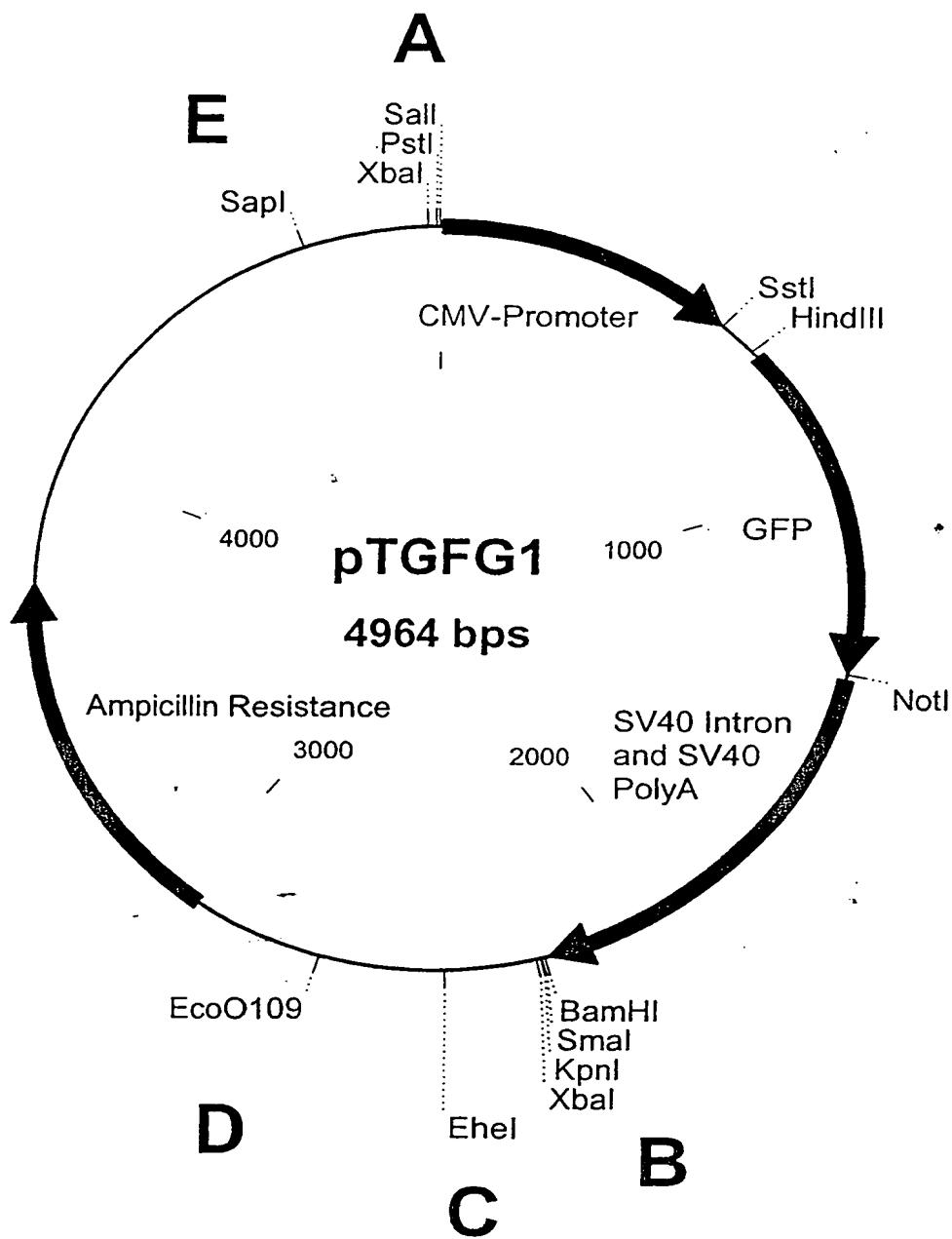


Fig. 3

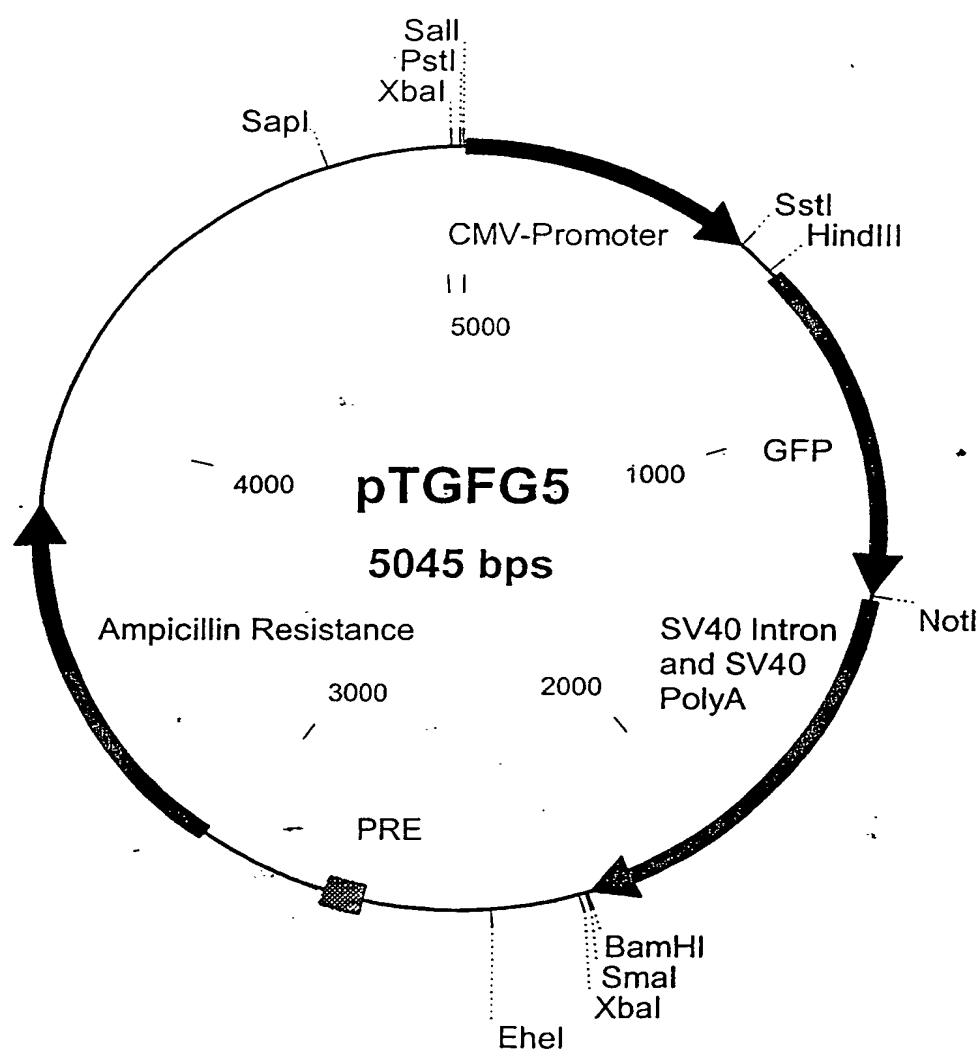


Fig. 4

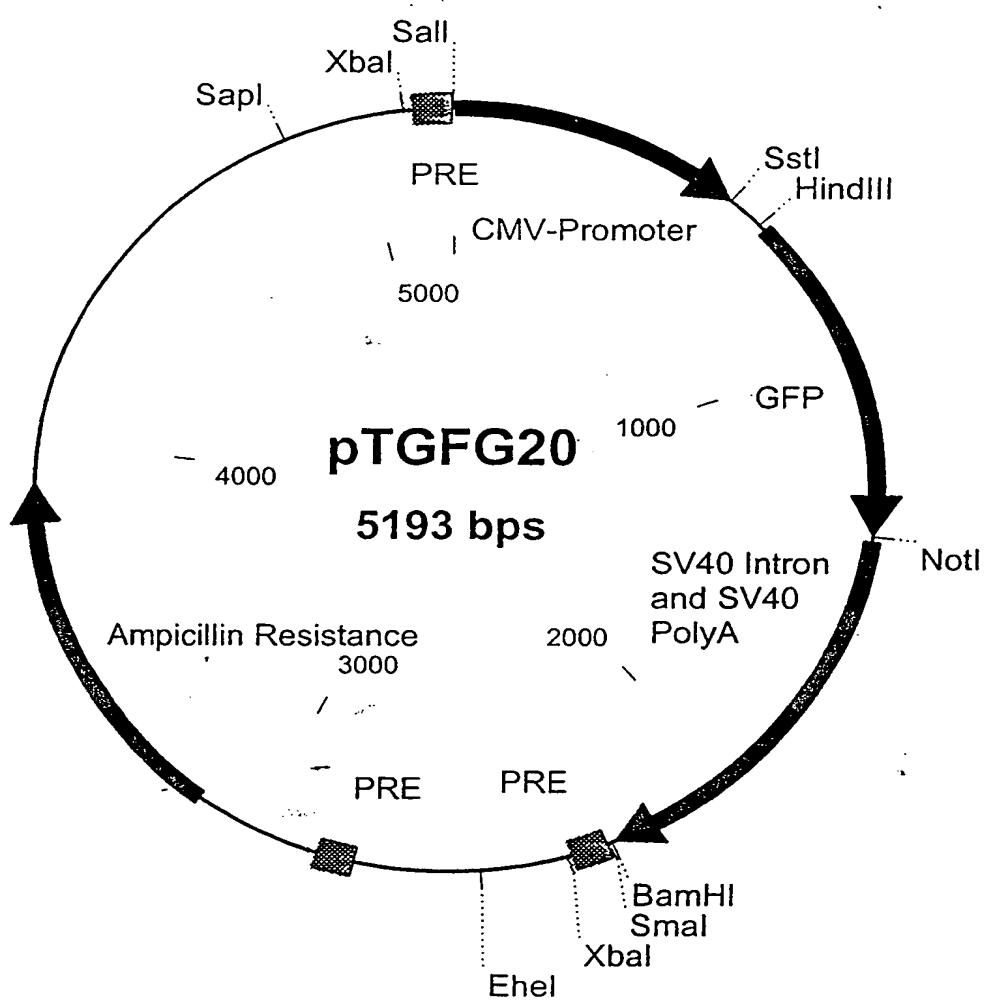


Fig. 5

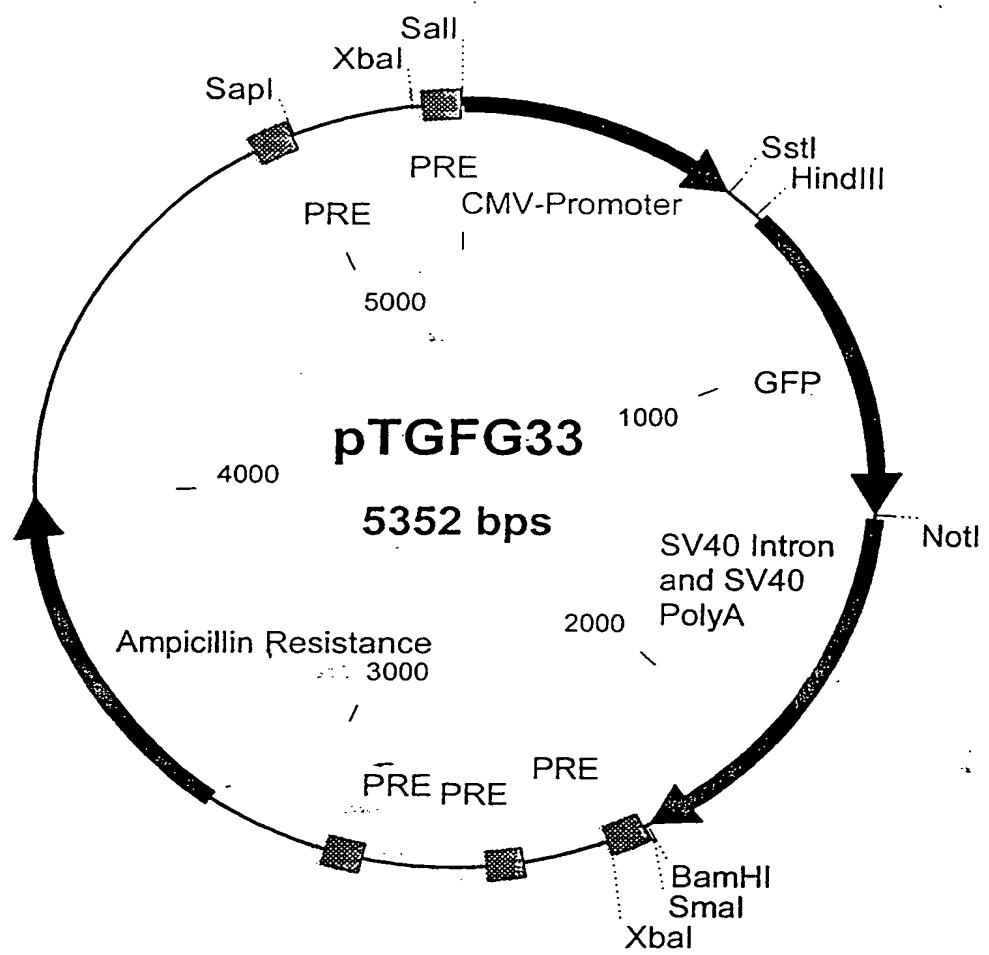


Fig. 6

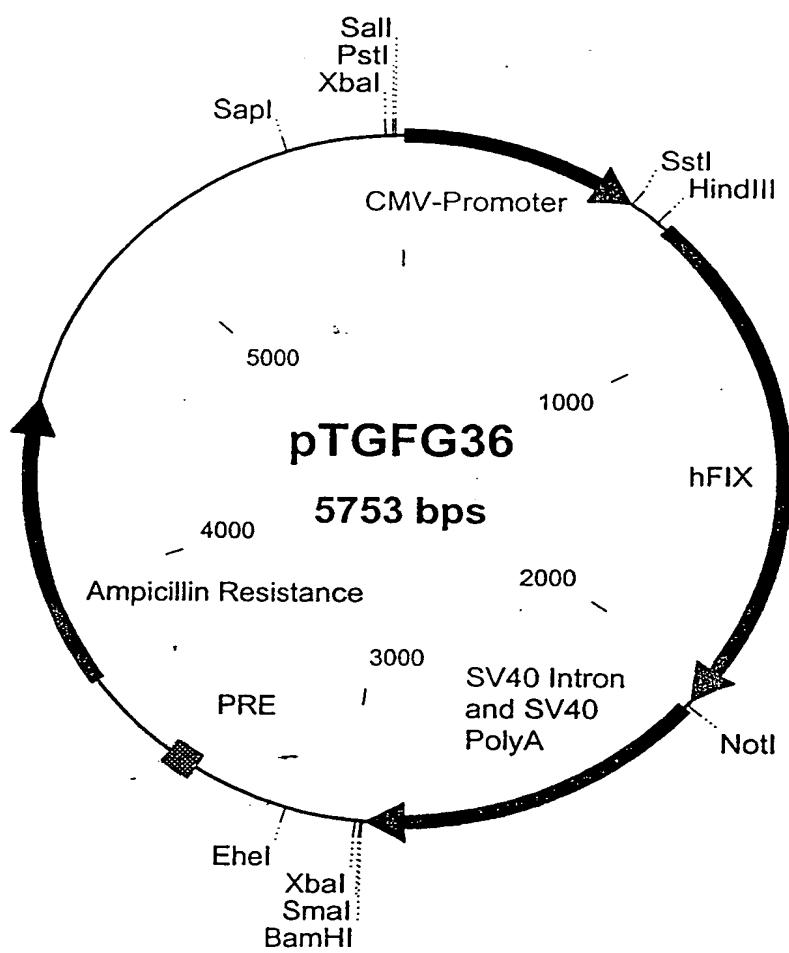


Fig. 7

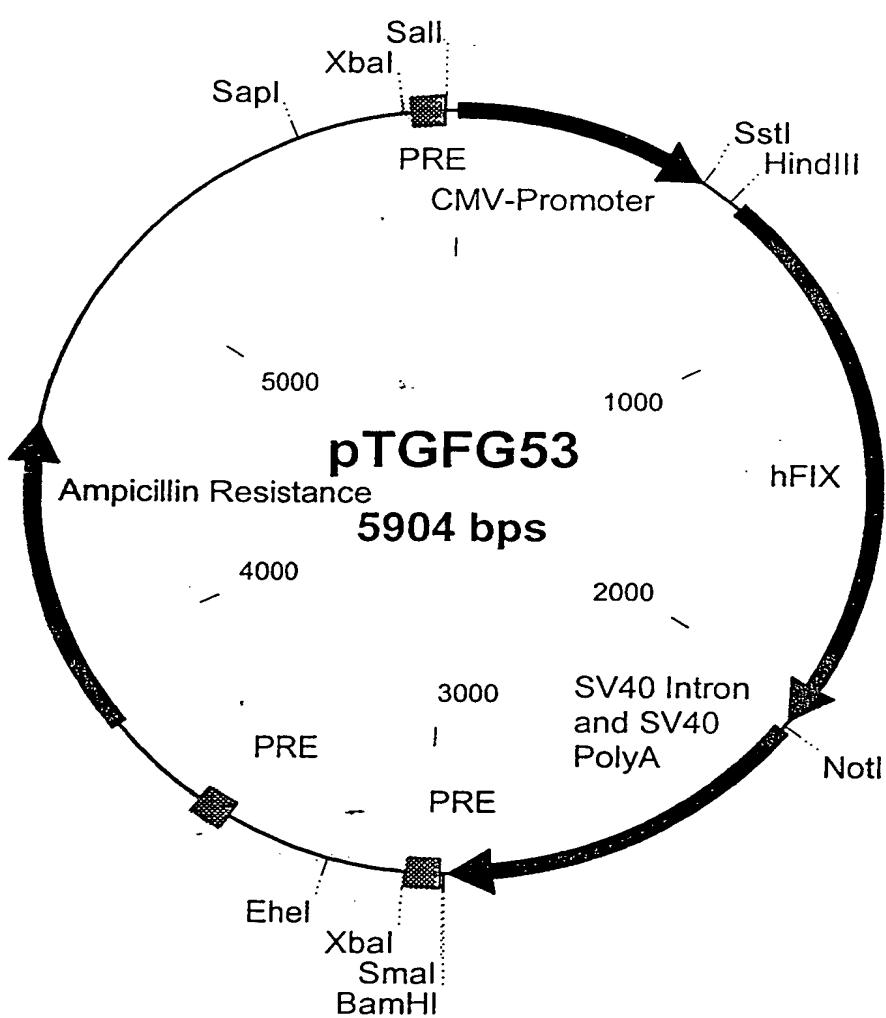
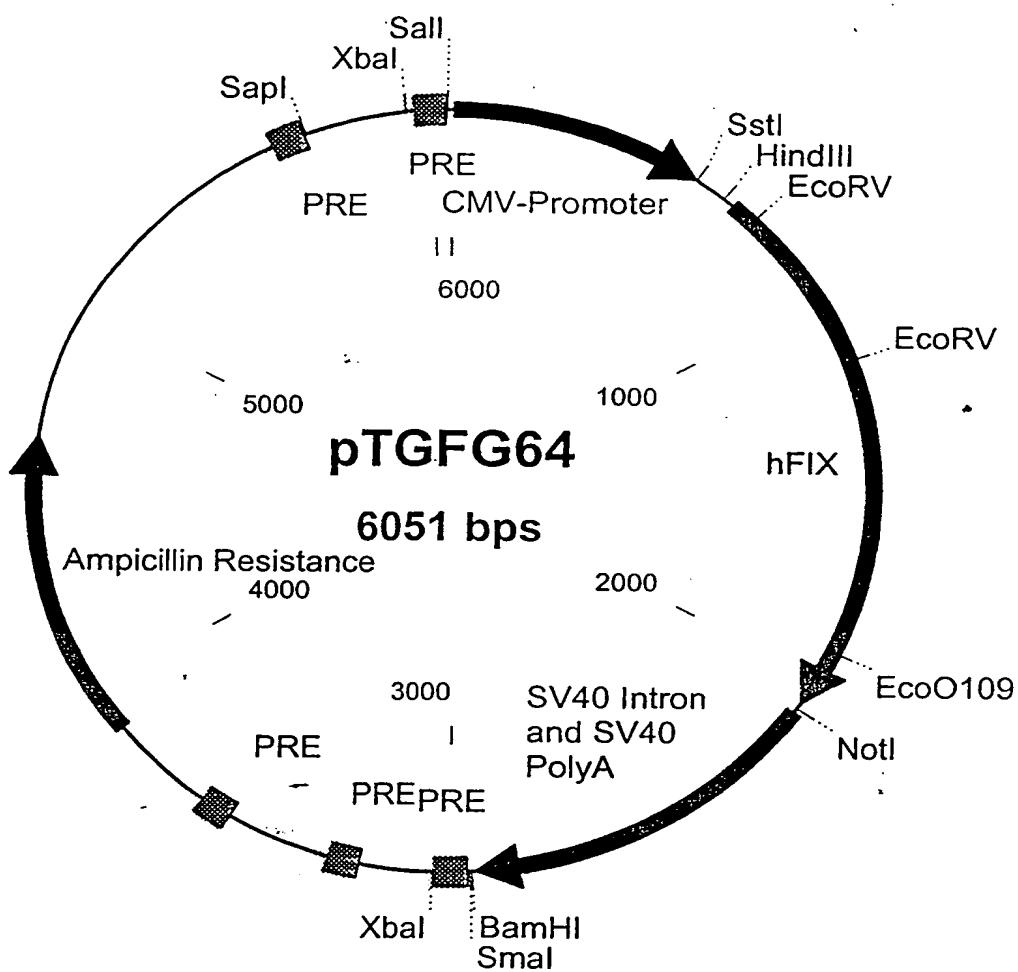


Fig. 8



09/913631
PCT/EP00/01368

WO 00/49147

9/22
Fig. 9

CGCGTTGACATTGATTATTGACTAGTTATAAGTAATCAATTACGGGGTCATTAGTCATAGCCCATAATGGAGTTC
CGCGTTACATAACTTACGGTAAATGGCCCGCCTGGCTGACCGCCCAACGACCCCCGCCATTGACGTCAATAATGACGTA
TGTCCCATACTAACCGCCTATAGGGACTTTCCATTGACGTCAATGGTGAGTATTAACGGTAAACTGCCACTTGGCAG
TACATCAAGTGTATCATATGCCAAGTACGCCCTTATTGACGTCAATGACGGTAAATGGCCCGCCTGGCATATGCCAG
TACATGACCTTATGGGACTTTCTACTTGGCAGTACATCTACGTATTAGTCATCGCTTACCATGGTATGGGTGAGTGC
GCAGTACATCAATGGCGTGGGATAGCGGTTGACTCACGGGATTTCACGGGATTCACGCCATTGACGTCAATGGGAGTT
TGTTTGGCACCAAATCAACGGGACTTCCAAAATGCGTAACAACCTGCCCAATTGACGCCAAATGGGGTAGGCGT
GTACGGTGGGAGGTCTATATAAGCAGAGCTCTGGCTTAACTAGAGAACCCACTGCTTACTGGCTTATCGAAATAAC
GACTCACTATAGGGAGACCCAAGCTGCATGCCAATTCCGAAGGTTATGCAGCGCGTAACATGATCATGGCAGAATC
ACCAGGCCTCATCACCATCTGCCCTTTAGGATATCTACTCAGTGTGAATGTACAGTTTCTTGATCATGAAAAGCCA
ACAAAATTCTGAATGCCAAAGAGGTATAATTGAGGTTAGGAAAGAGTTGTCAGGGAACTTGAGAGAGAAATGT
ATGGAAGAAAAGTGTAGTTGAGAAGCAGAGTTTGAGGAAACACTGAAAGAACAACTGAAATTGGAAGCAGTA
TGTTGATGGAGATCAGTGTGAGTCCAATCCATGTTAAATGGCGGAGTTGCAAGGATGACATTAATTCTATGAATGTT
GGTCCCTTGGATTGAGGAAAGAAGTGTGAATTAGATGTAACATGAAATGGAGATGCGAGCAGTT
TGAAAAATAGTGTGATAACAAGGTGGTTGCTCTGTACTGAGGGATATGACTTGAGAAAACAGAAGTCCTGTGA
ACCAGCAGTCCCATTTCATGTGGAGAGTTCTGTTACAAACTCTAACGCTCACCGTGCTGAGACTGTTTCTG
ATGGAAGTATGAAATCTACTGAAGCTGAAACCAATTGAGATAACATCACTCAAAGCAGGAACTCATTTAATGACTTC
ACTCGGGTTGTTGGAGAAGATGCCAAACAGGTCATTCCCTGGCAGGTTGTTGAATGGAAAGTTGATGCTT
CTGAGGCTCTATGTTAAATGGAAAGGATGCAACTCTGCTTCTGAGGTTGAGGAAACCTGAGGTTGACATGTT
TCGAGGTGAAACATAATTGAGGAGACAGAACATACAGAGAAAAGGAAATGTGATTCAGATTACAGGAGATAG
TACAATGCAGCTATTAAATAAGTACAACCATGACATTGCCCTTCTGGAACCTAGTGTCTAAACAGCTACG
TACACCTATTGCAATTGCTGACAAGGAATACAGAACATCTCCCTCAAATTGGATCTGGCTATGTAAGTGGCTGGGAA
GAGTCTCCACAAAGGGAGATCAGTTAGTCTCAGTACCTTAGTCCACTTGTGACATGAGGAGGAACTGTT
TCTACAAAGTTCACCATCTATAACACATGTTCTGCTGGCTTCATGAAGGAGGAGGATAGGAACTGTT
TGGGGACCCATGTTACTGAAGTGGAGGGACAGTTCTTAACCTGGAATTATTAGCTGGGTGAAGGAGTGTGCAATGA
AAGGCAAATATGGAATATACCAAGGTATCCGGTATGTCAACTGGATTAGGAAACAAAGCTCACTTAATGGGAA
CGGTCAGCGGCCGCGACTACTAGAGGATCTTGTGAAGGAACCTTACTTGTGTTGACATAATTGGACAAACTA
CCTACAGAGATTAAAGCTTAAGGTTAAATATAAAATTGAGGTTAAACTACTGATTCTAATTGTT
TGTATTAGATTCCAAACCTATGAACTGATGAATGGAGCAGTGGGAATGCCCTTAATGAGGAAACCTGTT
CAGAAGAAATGCCATCTAGTGTGAGGCTACTGCTGACTCTCAACATTCTACTCCCAAAAGAGGAA
GAAGACCCCAAGGACTTCCCTCAGAATTGCTAAGTTTGAGTCTGCTGTGTTAGTAATAGAAACTCTGCTTGCT
TGCTATTACACCACAAAGGAAAGCTGACTGCTATACAAGAAAATTATGAGGAAACCTTGTAAACCTTATAAGTA
GGCATAAACAGTATAATCATAACACTGTTTCTACTCCACACAGGCATAGAGTGTCTGCTATTAAACTATGCT
AAAAATTGTTGACTTTAGCTTTAAATTGTAAGGGGTTAATAAGGAATATTGATGTATAGTGCCTTGACTAGAGA
TCATAATCAGCCATACCACATTGTTAGAGGTTTACTTGTCTTAAACCTCCACCCCTGAACCTGAAACAT
AAAATGAATGCAATTGTTGTTAACTGTTATTGCACTTATAATGGTTACAAATAAGCAATAGCATCACAATT
CACAAATAAAGCATTTTTCACTGCTCATTCTAGTGTGTTGCTCAAACACTCATCAATGTTATCTATGCTG
CCGGTACCCCTAGAGCGAATTAACTCACTGGCCCTGCTTACACGCTGACTGGGAAACCCCTGGCTTACCAA
CTTAATCGCCTTGCAGCACATCCCCCTTCGCCAGCTGGCTAATAGCGAAGAGGCCGCCACCGATGCCCTCC
GTTGCGCAGCTGAATGGCGAATGGCGCTGATGGCTGTTACCGCTGCTGCTGCTGCTGCTGCTGCT
GGTGCACCTCTCAGTACAATCTGCTGATGCCGATAGTTAACGCCGACACCCGCAACACCCCGCTGACGCC
TGACGGCTGCTGCTGCCGATCCGTTACAGACAAGCTGTGACCGTCTCGGGAGCTGCATGTCAGAGGTT
ACCGTCATCACCAGAACCGCGAGACGAAAGGGGGTACAGCTCGTAGCTAGAACATCATGTTCTGGATATCAGCT
TCGTAGCTAGAACATCATGTTCTGGTACCCCTCGTGTACGCTATTGTTATAGGTTATGTCATGATAATAATGGTT
TCTTAGACGTCAGGTGGACTTTGGGGAAATGTGCGCGAACCCCTATTGTTATTCTAAATACATCAAATAT
GTATCCGCTCATGAGACAATAACCTGATAAAATGCTTAAATATTGAAAAGGAAGAGTATGAGTATTCAACATT
GTGTCGCCCTTATTCCCTTTTGCGGCTTTGCTCCTGTTTGCTCACCCAGAAACGCTGGTAAAGTAAAGAT
GCTGAAGATCAGTTGGGTGACGAGTGGTTACATGCAACTGGATCTAACAGCGGTAAGATCCTGAGAGTT
CGAAGAACCTTCCAAATGATGAGCACTTTAAAGTCTGCTATGTCGGCGGTATTACCGTATTGACGCC
AGCAACTCGGTCGCCGACACTATTCTCAGAATGACTGGTGTGAGTACTCACCAGTCACAGAAAAGCATCT
GGCATGACAGTAAGGAAATTGCACTGCTGCCATAACCATGAGTGTAAACACTGCGGCAACTTACTTCT
CGGAGGACCGAAGGAGCTAACCGCTTTGCAACACATGGGGATCATGTAACTCGCCTGATGTTGG
TGAATGAGGCATACCAAACGACGAGCGTGCACGACGATGCCCTGAGCAATGGCAACACGTT
GGCGAACACTACTCTAGCTTCCCGCAACAAATTAGACTGGATGGAGGGGAGATAAGTGCAGGACC
CTCGCCCTTCCGGCTGGTTATTGCTGATAAAATCTGGAGCCGGTGGCTCGCGTATTGCA
TGGGGCCAGATGGTAAGGCCCTCCGATCTGTTACACGACGGGAGTCAGGCAACTTACT
CAGATCGCTGAGGAGATAGGTGCCTCACTGATTAAGCATTGGTAACCTGTCAGACCAAGTT
TTTAAAACCTTAAATTAAAAGGATCTAGGTGAAGATCCTTTGATAATCTCATGAC
AGTTTCTGTTCCACTGAGCGTCAGACCCGCTAGAAAAGATCAAAGGATCTTCT
TGCTGCTTGCAACAAAAACACCGCTACCGCGTGGTTGTTGCGGATCAAGAGCT
GGTAACCTGGCTCAGCAGAGCGCAGATACCAAATACTGTTCTCTAGTGTAG
CTGTAGCACCGCCTACATACCTCGCTGCTAATCCGTTACAGTGGCTG
GGGTGGACTCAAGACGATAGTTACCGGATAAGGCGCAGCGTGGCTGA
GGAGCGAACGACCTACACCGAAGTACCTACAGCGTGTAG
GAGAAAGCGCCACGCTCCCGAAGGGAGAAAGG

09/913631

PCT/EP00/01368

WO 00/49147

10/22

Fig. 9 (continued)

CGGACAGGTATCCGGTAAGCGGCAGGGTCGGAACAGGGAGAGCGCACGAGGGAGCTTCCAGGGGAAACGCCCTGGTATCTT
TATAGTCCTGTCGGGTTTCGCCACCTCTGACTTGAGCGTCGATTTTGATGCTCGTCAGGGGGCGGAGCCTATGGAA
AAACGCCAGCAACCGGCCCTTTTACGGTCCCTGGCCTTTGCTGGCCTTTGCTCACATGTTCTTCCTGCGTTATCCC
CTGATTCTGTGGATAACCGTATTACCGCCTTGAGTGAGCTGATAACCGCTCGCCGCAAGCGACCGAGCGCAGCGAG
TCAGTGAGCGAGGAAGCGGAAGAGCGCCCAATACGCAAACCGCCTCTCCCCGCGCTGGCCGATTCAATTAGCAGCTG
GCACGACAGGTTCCCGACTGGAAAGCGGGCAGTGAGCGCAACGCAATTATGTGAGTTAGCTCACTCATAGGCACCCC
AGGCTTACACTTATGCTTCCGGCTCGTATGTTGTGGAATTGTGAGCGGATAACAATTACACAGGAAACAGCTAT
GACCATGATTACGCCAAGCTCTAGAGCTAGAGCTAGAGAGCTTGCATGCCCTGCAGGTCG

11/22
Fig. 10

Met Gln Arg Val Asn Met Ile Met Ala Glu Ser Pro Gly Leu Ile Thr
1 5 10 15

Ile Cys Leu Leu Gly Tyr Leu Leu Ser Ala Glu Cys Thr Val Phe Leu
20 25 30

Asp His Glu Asn Ala Asn Lys Ile Leu Asn Arg Pro Lys Arg Tyr Asn
35 40 45

Ser Gly Lys Leu Glu Glu Phe Val Gln Gly Asn Leu Glu Arg Glu Cys
50 55 60

Met Glu Glu Lys Cys Ser Phe Glu Glu Ala Arg Glu Val Phe Glu Asn
65 70 75 80

Thr Glu Arg Thr Thr Glu Phe Trp Lys Gln Tyr Val Asp Gly Asp Gln
85 90 95

Cys Glu Ser Asn Pro Cys Leu Asn Gly Gly Ser Cys Lys Asp Asp Ile
100 105 110

Asn Ser Tyr Glu Cys Trp Cys Pro Phe Gly Phe Glu Gly Lys Asn Cys
115 120 125

Glu Leu Asp Val Thr Cys Asn Ile Lys Asn Gly Arg Cys Glu Gln Phe
130 135 140

Cys Lys Asn Ser Ala Asp Asn Lys Val Val Cys Ser Cys Thr Glu Gly
145 150 155 160

Tyr Arg Leu Ala Glu Asn Gln Lys Ser Cys Glu Pro Ala Val Pro Phe
165 170 175

Pro Cys Gly Arg Val Ser Val Ser Gln Thr Ser Lys Leu Thr Arg Ala
180 185 190

Glu Thr Val Phe Pro Asp Val Asp Tyr Val Asn Ser Thr Glu Ala Glu
195 200 205

Thr Ile Leu Asp Asn Ile Thr Gln Ser Thr Gln Ser Phe Asn Asp Phe
210 215 220

Thr Arg Val Val Gly Gly Glu Asp Ala Lys Pro Gly Gln Phe Pro Trp
225 230 235 240

Gln Val Val Leu Asn Gly Lys Val Asp Ala Phe Cys Gly Gly Ser Ile
245 250 255

Val Asn Glu Lys Trp Ile Val Thr Ala Ala His Cys Val Glu Thr Gly
260 265 270

Val Lys Ile Thr Val Val Ala Gly Glu His Asn Ile Glu Glu Thr Glu
275 280 285

His Thr Glu Gln Lys Arg Asn Val Ile Arg Ile Ile Pro His His Asn
290 295 300

09/913631
PCT/EP00/01368

WO 00/49147

12/22

Fig. 10 (continued)

Tyr Asn Ala Ala Ile Asn Lys Tyr Asn His Asp Ile Ala Leu Leu Glu
305 310 315 320

Leu Asp Glu Pro Leu Val Leu Asn Ser Tyr Val Thr Pro Ile Cys Ile
325 330 335

Ala Asp Lys Glu Tyr Thr Asn Ile Phe Leu Lys Phe Gly Ser Gly Tyr
340 345 350

Val Ser Gly Trp Gly Arg Val Phe His Lys Gly Arg Ser Ala Leu Val
355 360 365

Leu Gln Tyr Leu Arg Val Pro Leu Val Asp Arg Ala Thr Cys Leu Arg
370 375 380

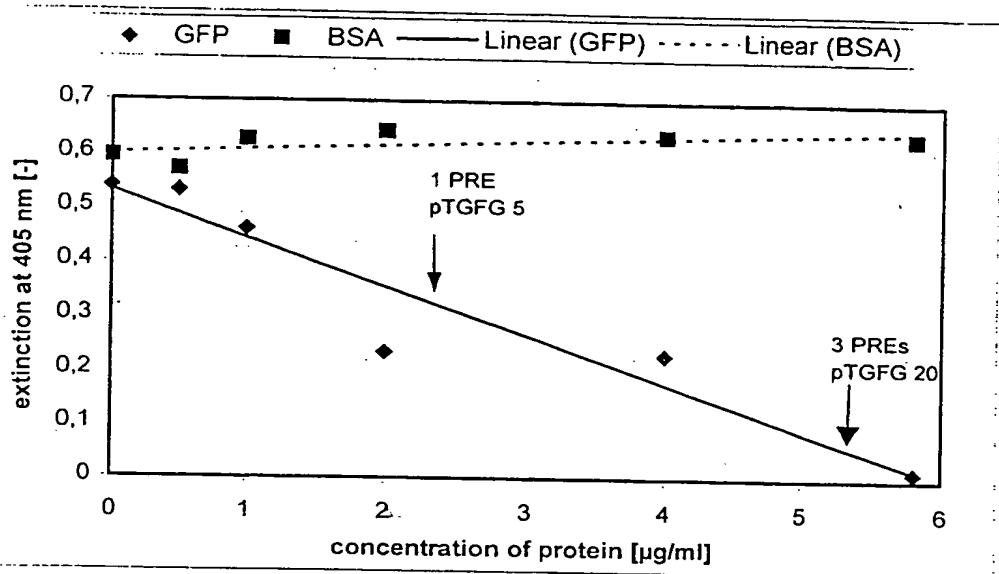
Ser Thr Lys Phe Thr Ile Tyr Asn Asn Met Phe Cys Ala Gly Phe His
385 390 395 400

Glu Gly Gly Arg Asp Ser Cys Gln Gly Asp Ser Gly Gly Pro His Val
405 410 415

Thr Glu Val Glu Gly Thr Ser Phe Leu Thr Gly Ile Ile Ser Trp Gly
420 425 430

Glu Glu Cys Ala Met Lys Gly Lys Tyr Gly Ile Tyr Thr Lys Val Ser
435 440 445

Arg Tyr Val Asn Trp Ile Lys Glu Lys Thr Lys Leu Thr
450 455 460

13/22
Fig. 11

14/22

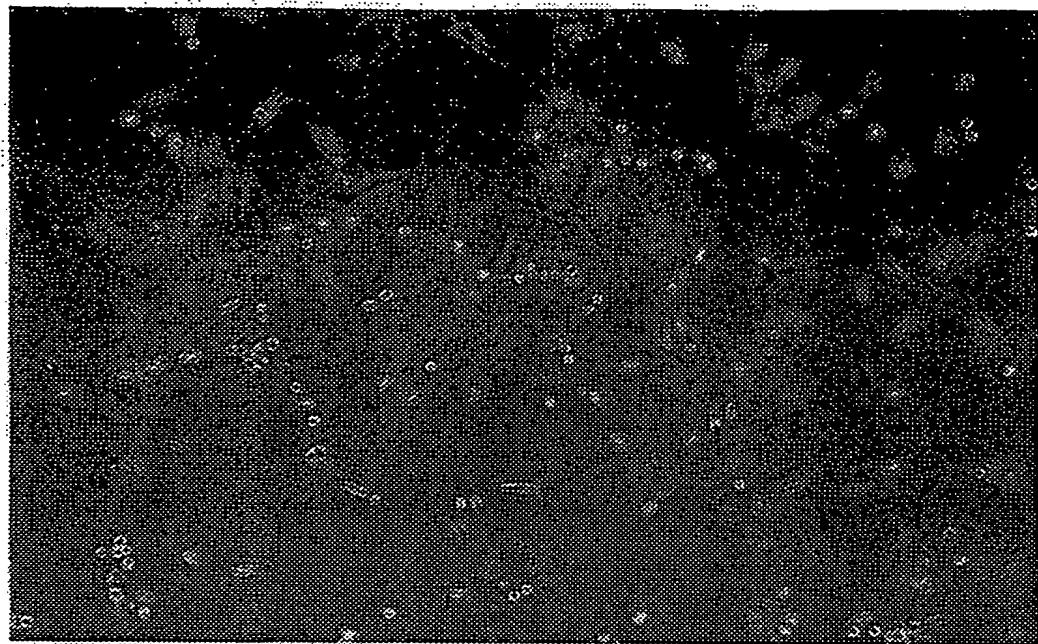


Fig. 12a



Fig 12 b

BEST AVAILABLE COPY

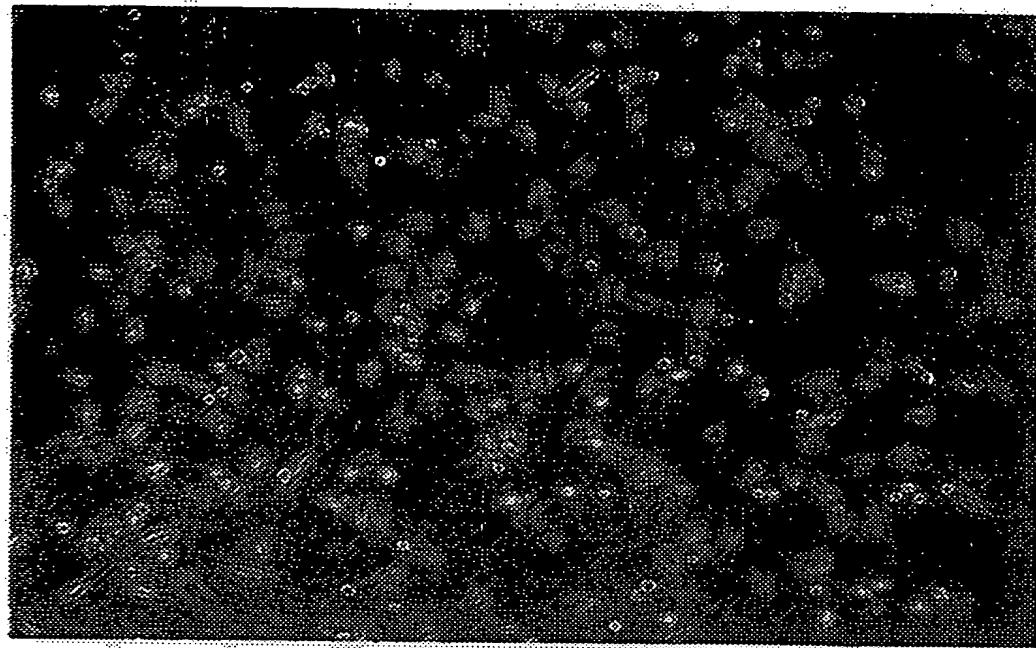


Fig 12 c

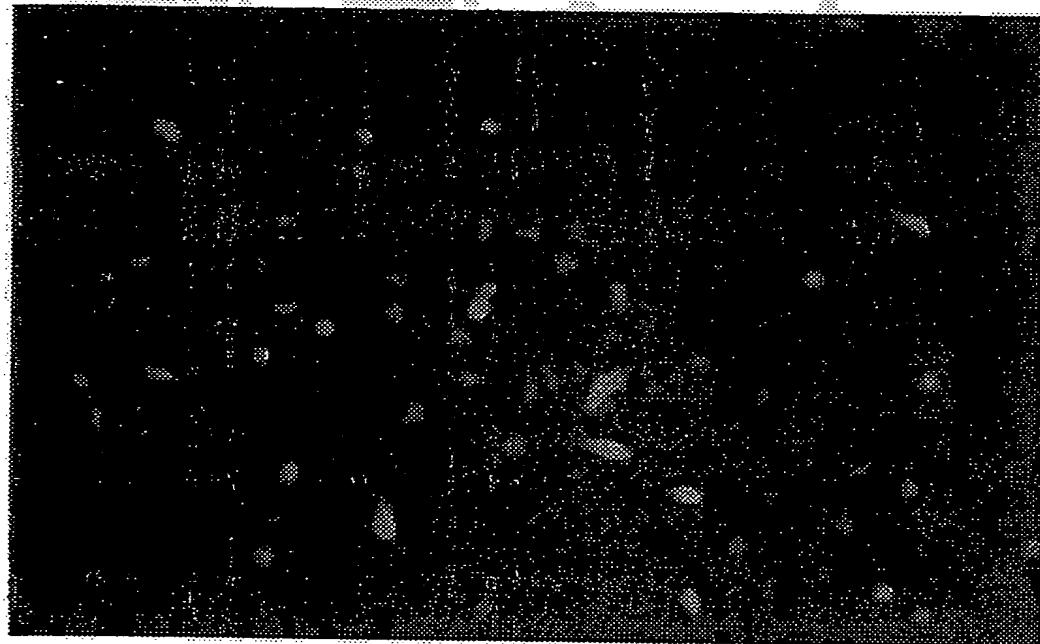


Fig 12 d

BEST AVAILABLE COPY

16/22
Fig. 13

Detection of GFP expressed from Theragene-vectors (n=16)

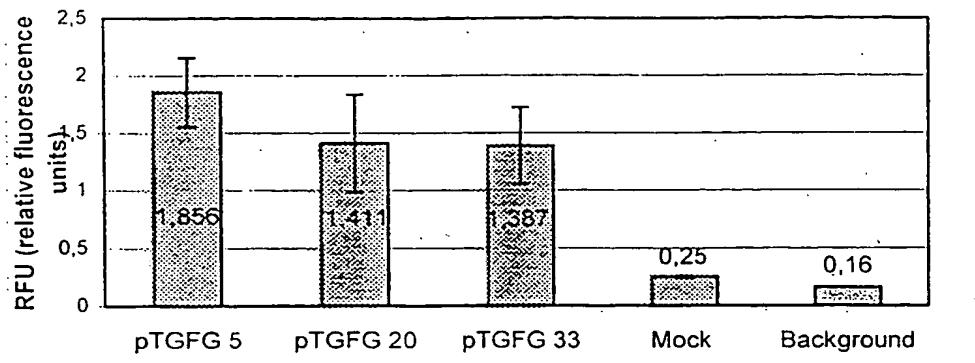
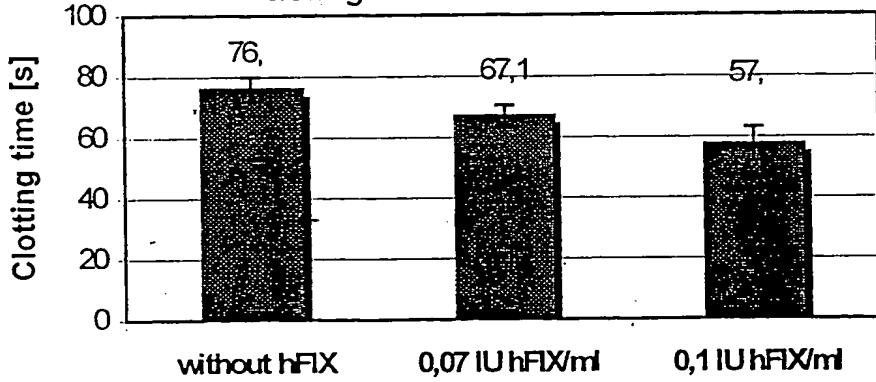


Fig. 14

Additive effect of human factor IX on clotting time of mouse blood



BEST AVAILABLE COPY

17/22

Fig. 15

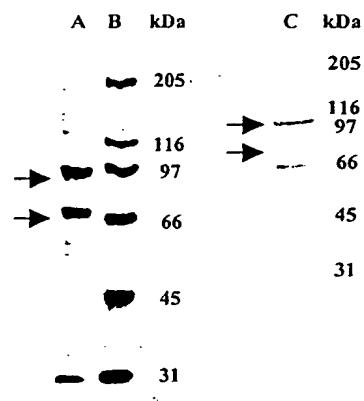
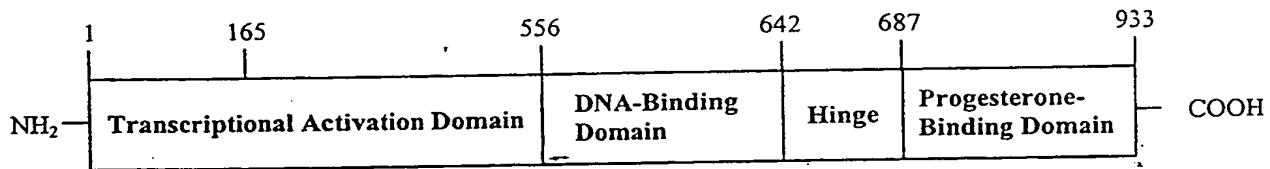


Fig. 16



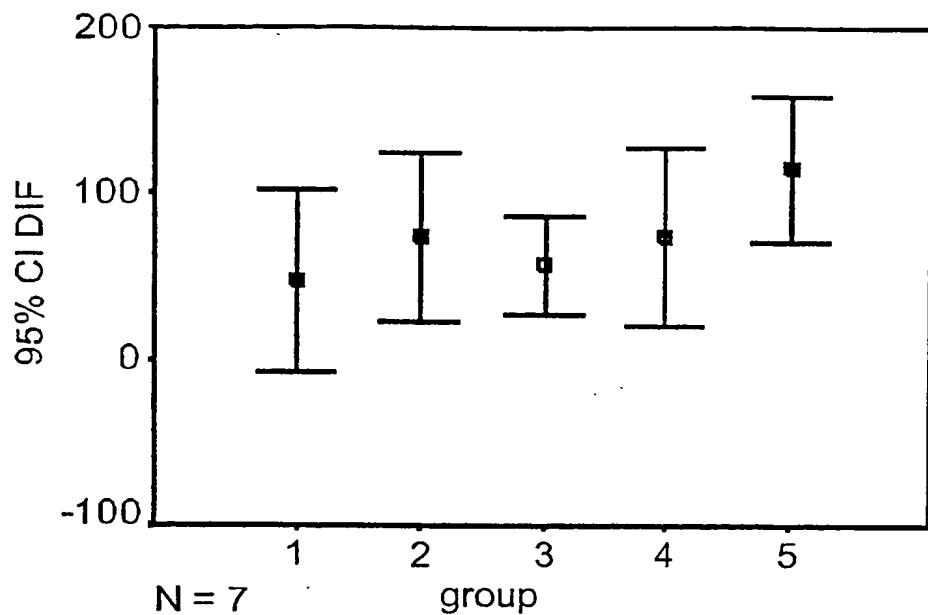


Fig. 17

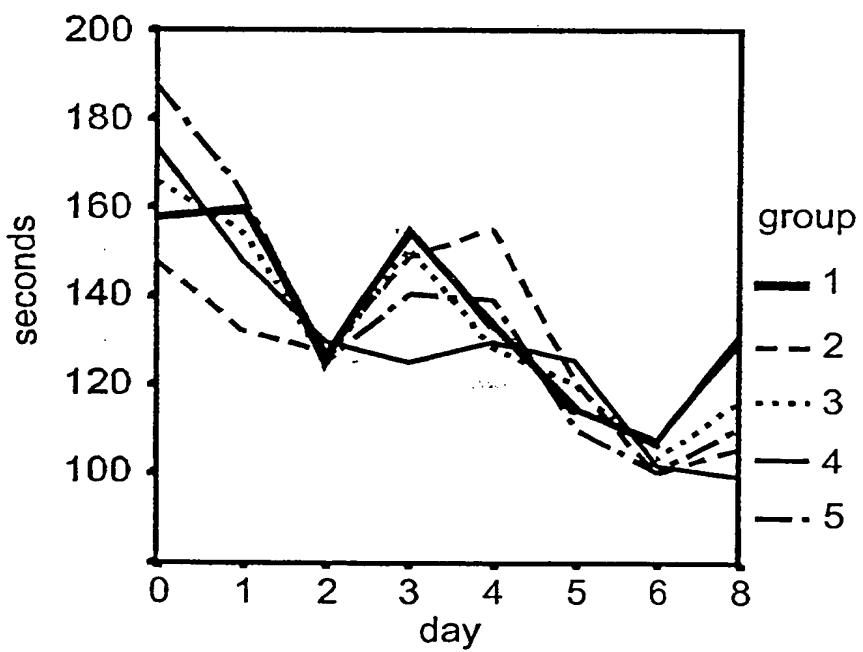
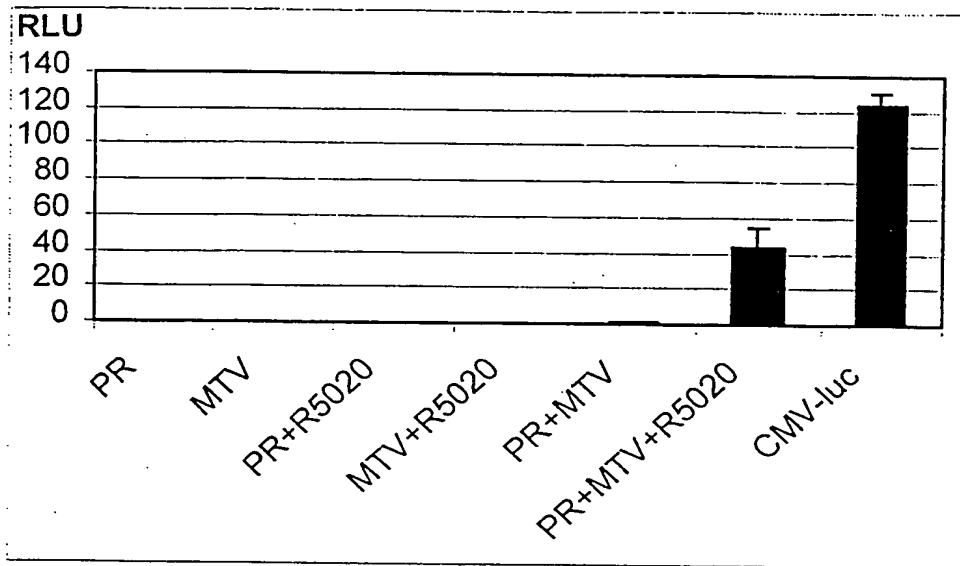


Fig. 18

Fig. 19



09/913631
PCT/EP00/01368

WO 00/49147

21/22

1 MTELKAKGPR APHVAGGPPS PEVGSPLLCR PAAGPFPGSQ TSDTLPEVSA IPIISLDGLLF
61 PRPCQGQDPS DEKTQDQQSL SDVEGAYSRA EATRGAGGSS SSPPEKDSDL LDSVLDTLLA
121 PSGFGQSQPS PPACEVTSSW CLFGPELPED PPAAPATQRV LSPLMSRSGC KVGDSSTAA
181 AHKVLPRGLS PARQLLLPAS ESPHWSGAPV KPSPQAAAVE VEEEEDGSESE ESAGPLLKKG
241 PRALGGAAAG GGAAAVPPGA AAGGVALVPK EDSRFSAPRV ALVEQDAPMA FGRSPLATTV
301 MDFIHVPILP LNHALLAART RQLLEDESYD GGAGAAASF A PPRSSPCASS TPVAVGDFPD
361 CAYPPDAEPK DDAYPLYSDF QPPALKIKEE EEGAEASARS PRSYLVAGAN PAAFPDFPLG
421 PPPPLPPRAT PSRPGEAAVT AAPASASVSS ASSSGSTLEC ILYKAEGAPP QQGPFAAPPC
481 KAPGASGCLL PRDGLPSTSA SAAAAGAAPA LYPALGLNGL PQLGYQAABL KEGLPQVYPP
541 YLNLYLRPDSE ASQSPQYSFE SLPQKICLIC GDEASGCHYG VLTCGSCKVF FKRAMEGQHN
601 YLCAGRNDI VDKIRRKNCP ACRLRKCCQA GMVLGGRKFK KFNKVRVVRA LDAAVALPQPL
661 GVPNESQALS QRFTFSPGQD IQLIPPLINL LMSIEPDVIY AGHDNTKPDT SSSLTSLNQ
721 LGERQLLSVV KWSKSLPGFR NLHIDDQITL IQYSWMSLMV FGLGWRSYKH VSGQMLYFAP
781 DLILNEQRMK ESSFYSLCLT MWQIPQEFVK LQVSQEEFLC MKVLLLLNTI PLEGGLRSQTQ
841 FEEMRSSYIR ELIKAIGLRQ KGVVSSSSQRF YQLTKLLDNL HDLVKQLHLY CLNTFIQSRA
901 LSVEFPEMMS EVIAAQLPKI LAGMVKPLLH HKK

Fig. 20

1 ctgaccagcg ccgcctccc cggcccccga cccaggaggt ggagatccct ccggtccagc
 61 cacattcaac acccacttcc tccctccct gcccstatat tccccaaacc ccctccctcc
 121 tccctttcc ctccctccctg gagacgggg aggagaaaag gggagtccag tcgtcatgac
 181 tgagctgaag gcaaagggtc cccgggtcc ccacgtggcg gcggggccgc cctcccccga
 241 ggtcgatcc ccactgctgt gtcgcccagc cgcaaggccg ttcccgggaa gccagaccc
 301 ggacacccctt cctgaagttt cggccatacc tatctccctg gacgggtcac tttccctcg
 361 gcccgtccag ggacaggacc cctccgacga aaagacgcag gaccaggcagt cgctgtcgga
 421 cgtggaggcc gcatattcca gagctgaagc tacaagggt gctggaggca gcagttctag
 481 tccccccagaa aaggacagcg gactgctgga cagtgcttgc gacactctgt tgccgcctc
 541 aggtccccggg cagagccaac ccagccctcc cgctgcgag gtcaccagct ctgggtgcct
 601 gttggggccc gaattcccg aagatccacc ggctgcccccc gccaccacgc gggtgttgc
 661 cccgctcatg agccggccg ggtcaagggt tggagacgc tccgggacgg cagctgccc
 721 taaagtgtcg cccggggcc tgcaccaggc cccggcagctg ctgctcccg cctctgagag
 781 ccctcaactgg tccggggccc cagtgaagcc gtctccgcag gccgctgcgg tgaggttga
 841 ggaggaggat ggctctgagt ccgaggagtc tgcgggtccg ctctgaagg gcaaaccctcg
 901 ggctctgggt ggcgcggcgg ctggaggagg agccgcggct tccggcggg gggcggcagc
 961 aggaggcgcc gcccgttcc ccaaggaaga ttcccgcttc tcagcgcaca gggtcgcct
 1021 ggtggagcag gacgcggcga tgccggccgg ggcctcccg ctggccacca cggtgatgg
 1081 tttcatccac gtgcctatcc tgccctctcaa tcacgccta ttggcagccc gcaactcgca
 1141 gctgctggaa gacgaaagtt acgacggccg ggccgggct gccagcgcct ttggcccgcc
 1201 gcgaggttca ccctgtgcct cgtccacccc ggtcgctgt ggcacttcc cggactgcgc
 1261 gtacccggccc gacgccggc ccaaggacga cgcgtacccct ctctatacg acttccagcc
 1321 gcccgtctta aagataaagg aggaggaggaa aggccggag gctccgcgc gctcccgcc
 1381 ttcctacccct gtggccgtg ccaaccccgcc agcctcccg gatttccgt tggggccacc
 1441 gcccccgctg cccggccgag cgaccccatc cagacccggg gaagccggg tgacggccgc
 1501 accccggcagt gcctcagtc cgtctgcgtc ctccctgggg tcgaccctgg agtgcaccc
 1561 gtacaaagcg gaggccgcgc cgcacccagca gggccgttc ggcgcgcgc cctgcaaggc
 1621 gccggggcgcg agccgtgc tgctcccgcc ggacggcctg ccctccaccc cgcctctgc
 1681 cgccggccgc gggggccccc cccgcgtcta ccctgcactc ggcctcaacg ggctcccgca
 1741 gctcgctac caggccgcgc tgctcaaggaa gggccgtccg caggtctacc ccccttatct
 1801 caactacctg aggccgatt cagaagccag ccagacccca caatacagct tcgagtatt
 1861 acctcagaag atttgttaa tctgtggggaa tgaagcatca ggctgtcatt atgggttct
 1921 tacctgtggg agctgttaagg tcttctttaa gagggcaatg gaagggcagc acaactactt
 1981 atgtgttggaa agaaatgact gcacgttgc taaaatccgc agaaaaaaact gcccagcatg
 2041 tcgccttaga aagtgtgtc aggctggcat ggtcccttggaa ggtcgaaaat taaaaaagtt
 2101 caataaaagtc agatgtgtc gaggacttggaa tgctgttgc ctcccacacgc cattggcgt
 2161 tccaaatgaa agccaagccc taagccagaa attcacttt tcaccagtc aagacataca
 2221 gttgattcca ccactgatca acctgttaat gagcattgaa ccagatgtga tctatgcagg
 2281 acatgacaac aaaaaaccgt acacccatca ttcttgcgt acaagtctta atcaactagg
 2341 cgagaggcaa cttcttcag tagtcaagtgt gtctaatca ttgcagggtt ttgaaactt
 2401 acatattgtt gaccagataa ctctcattca gtattttgg atgagcttaa tgggtttgg
 2461 tcttagatgg agatcctaca aacatgtcag tggcagatg ctgtatcc caccgtatc
 2521 aataactaaat gaacagcgga tggaaagaatc atcattctat tcattatgcc ttaccaatgtg
 2581 gcagatccca caggagtttgc tcaagcttca agttagccaa gaagagttcc tctgtatgaa
 2641 agtattgtta cttcttaata caattccctt ggaagggtcta cgaagtcaaa cccagttga
 2701 ggagatgagg tcaagctaca tttagagatc catcaaggca attgggttga ggcaaaaagg
 2761 agttgtgtcg agtcacacgc gtttctatca acttacaaaa ttcttgcata acttgcatga
 2821 tcttgtcaaa caacttcattc tgcactgtt gaatacattt atccagtc gggcactgag
 2881 tggtaattt ccagaaatga tgcactgtt tattgtgc caattaccca agatatttggc
 2941 agggatggtg aaaccccttc tctttcataaa

Fig. 21

1

SEQUENCE LISTING

<110> Theragene Biomedical Laboratories GmbH
5 <120> Hormone-Hormone Receptor Complexes and Nucleic Acid
Constructs and Their Use in Gene Therapy
<130> 000065wo/JH/ml
10 <140>
<141>
<160> 19
15 <170> PatentIn Ver. 2.1

<210> 1
<211> 5753
20 <212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: vector pTGF36
25 <220>
<221> CDS
<222> (689)..(2071)

30 <400> 1.
cgcgttgaca ttgattattt actagttatt aatagtaatc aattacgggg tcatttagttc 60
atagccata tatggagttc cgcgttacat aacttacggt aaatggcccg cctggctgac 120
35 cgcggcaacga ccccccggcca ttgacgtcaa taatgacgta tggccatata gtaacgccaa 180
tagggacttt ccattgacgt caatgggtgg agtatttacg gtaaaactgcc cacttggcag 240
40 tacatcaagt gtatcatatg ccaagtacgc cccctattga cgtcaatgac ggtttatggc 300
ccgcctggca ttatgcccag tacatgacct tatggactt tcctacttgg cagttacatct 360
acgtatttagt catcgctatt accatggtga tgccgttttg gcagttacatc aatgggcgtg 420
45 gatagcgggt tgactcacgg ggatttccaa gtctccaccc cattgacgtc aatgggagtt 480
tgttttggca ccaaatcaa cgggactttc caaaatgtcg taacaactcc gccccattga 540
50 cggaaatggg cggttaggcgt gtacgggtgg aggtctatat aagcagagct ctctggctaa 600
ctagagaacc cactgcttac tggcttatcg aaattaatac gactcactat agggagaccc 660
aagcttgcattt gccaattccg caaaggattt atg cag cgc gtg aac atg atc atg
55 Met Gln Arg Val Asn Met Ile Met
1 5
gca gaa tca cca ggc ctc atc acc atc tgc ctt tta gga tat cta ctc 760
Ala Glu Ser Pro Gly Leu Ile Thr Ile Cys Leu Leu Gly Tyr Leu Leu
10 15 20

	agt gct gaa tgt aca gtt ttt ctt gat cat gaa aac gcc aac aaa att	808	
	Ser Ala Glu Cys Thr Val Phe Leu Asp His Glu Asn Ala Asn Lys Ile		
25	30	35	
5	ctg aat cgg cca aag agg tat aat tca ggt aaa ttg gaa gag ttt gtt	856	
	Leu Asn Arg Pro Lys Arg Tyr Asn Ser Gly Lys Leu Glu Glu Phe Val		
	45	50	55
10	caa ggg aac ctt gag aga gaa tgt atg gaa gaa aag tgt agt ttt gaa	904	
	Gln Gly Asn Leu Glu Arg Glu Cys Met Glu Glu Lys Cys Ser Phe Glu		
	60	65	70
15	gaa gca cga gaa gtt ttt gaa aac act gaa aga aca act gaa ttt tgg	952	
	Glu Ala Arg Glu Val Phe Glu Asn Thr Glu Arg Thr Thr Glu Phe Trp		
	75	80	85
	aag cag tat gtt gat gga gat cag tgt gag tcc aat cca tgt tta aat	1000	
	Lys Gln Tyr Val Asp Gly Asp Gln Cys Glu Ser Asn Pro Cys Leu Asn		
20	90	95	100
	ggc ggc agt tgc aag gat gac att aat tcc tat gaa tgt tgg tgt ccc	1048	
	Gly Gly Ser Cys Lys Asp Asp Ile Asn Ser Tyr Glu Cys Trp Cys Pro		
	105	110	115
25	120		
	ttt gga ttt gaa gga aag aac tgt gaa tta gat gta aca tgt aac att	1096	
	Phe Gly Phe Glu Gly Lys Asn Cys Glu Leu Asp Val Thr Cys Asn Ile		
	125	130	135
30	aag aat ggc aga tgc gag cag ttt tgt aaa aat agt gct gat aac aag	1144	
	Lys Asn Gly Arg Cys Glu Gln Phe Cys Lys Asn Ser Ala Asp Asn Lys		
	140	145	150
35	gtg gtt tgc tcc tgt act gag gga tat cga ctt gca gaa aac cag aag	1192	
	Val Val Cys Ser Cys Thr Glu Gly Tyr Arg Leu Ala Glu Asn Gln Lys		
	155	160	165
	tcc tgt gaa cca gca gtg cca ttt cca tgt gga aga gtt tct gtt tca	1240	
	Ser Cys Glu Pro Ala Val Pro Phe Pro Cys Gly Arg Val Ser Val Ser		
	170	175	180
40			
	caa act tct aag ctc acc cgt gct gag act gtt ttt cct gat gtg gac	1288	
	Gln Thr Ser Lys Leu Thr Arg Ala Glu Thr Val Phe Pro Asp Val Asp		
	185	190	195
45	200		
	tat gta aat tct act gaa gct gaa acc att ttg gat aac atc act caa	1336	
	Tyr Val Asn Ser Thr Glu Ala Glu Thr Ile Leu Asp Asn Ile Thr Gln		
	205	210	215
50			
	agc acc caa tca ttt aat gac ttc act cgg gtt ggt gga gaa gat	1384	
	Ser Thr Gln Ser Phe Asn Asp Phe Thr Arg Val Val Gly Gly Glu Asp		
	220	225	230
55			
	gcc aaa cca ggt caa ttc cct tgg cag gtt ttg aat ggt aaa gtt	1432	
	Ala Lys Pro Gly Gln Phe Pro Trp Gln Val Val Leu Asn Gly Lys Val		
	235	240	245
	gat gca ttc tgt gga ggc tct atc gtt aat gaa aaa tgg att gta act	1480	
	Asp Ala Phe Cys Gly Gly Ser Ile Val Asn Glu Lys Trp Ile Val Thr		
	250	255	260
60			

	gct gcc cac tgt gtt gaa act ggt gtt aaa att aca gtt gtc gca ggt Ala Ala His Cys Val Glu Thr Gly Val Lys Ile Thr Val Val Ala Gly 265 270 275 280	1528
5	gaa cat aat att gag gag aca gaa cat aca gag caa aag cga aat gtg Glu His Asn Ile Glu Glu Thr Glu His Thr Glu Gln Lys Arg Asn Val 285 290 295	1576
10	att cga att att cct cac cac aac tac aat gca gct att aat aag tac Ile Arg Ile Ile Pro His His Asn Tyr Asn Ala Ala Ile Asn Lys Tyr 300 305 310	1624
15	aac cat gac att gcc ctt ctg gaa ctg gac gaa ccc tta gtg cta aac Asn His Asp Ile Ala Leu Leu Glu Leu Asp Glu Pro Leu Val Leu Asn 315 320 325	1672
20	agc tac gtt aca cct att tgc att gct gac aag gaa tac acg aac atc Ser Tyr Val Thr Pro Ile Cys Ile Ala Asp Lys Glu Tyr Thr Asn Ile 330 335 340	1720
25	ttc ctc aaa ttt gga tct ggc tat gta agt ggc tgg gga aga gtc ttc Phe Leu Lys Phe Gly Ser Gly Tyr Val Ser Gly Trp Gly Arg Val Phe 345 350 355 360	1768
30	cac aaa ggg aga tca gct tta gtt ctt cag tac ctt aga gtt cca ctt His Lys Gly Arg Ser Ala Leu Val Leu Gln Tyr Leu Arg Val Pro Leu 365 370 375	1816
35	gtt gac cga gcc aca tgt ctt cga tct aca aag ttc acc atc tat aac Val Asp Arg Ala Thr Cys Leu Arg Ser Thr Lys Phe Thr Ile Tyr Asn 380 385 390	1864
40	aac atg ttc tgt gct ggc ttc cat gaa gga ggt aga gat tca tgt caa Asn Met Phe Cys Ala Gly Phe His Glu Gly Arg Asp Ser Cys Gln 395 400 405	1912
45	gga gat agt ggg gga ccc cat gtt act gaa gtg gaa ggg acc agt ttc Gly Asp Ser Gly Gly Pro His Val Thr Glu Val Glu Gly Thr Ser Phe 410 415 420	1960
50	tta act gga att att agc tgg ggt gaa gag tgt gca atg aaa ggc aaa Leu Thr Gly Ile Ile Ser Trp Gly Glu Glu Cys Ala Met Lys Gly Lys 425 430 435 440	2008
55	tat gga ata tat acc aag gta tcc cgg tat gtc aac tgg att aag gaa Tyr Gly Ile Tyr Thr Lys Val Ser Arg Tyr Val Asn Trp Ile Lys Glu 445 450 455	2056
60	aaa aca aag ctc act taatggatc ggtcgagcgg ccgcgactct actagaggat Lys Thr Lys Leu Thr 460	2111
	ctttgtgaag gaaccttact tctgtggtgt gacataattt gacaaactac ctacagagat	2171
	ttaaaagctct aaggtaaata taaaattttt aagtgtataa tttgtttaaac tactgattct	2231
	aattgtttgt gtatTTAGA ttccAACCTA tgGAACtGAT gaATGGGAGC AGTGGTGGAA	2291
	tgccttaat gagAAAACC TGTtTGCTC agaAGAAATG CCACTAGTG ATGATGAGGC	2351
	tactgctgac tctcaacatt ctactcctcc aaaaaagaag agaaaggtag aagaccccaa	2411

ggactttcct tcagaattgc taagttttt gagtcatgct gtgttagta atagaactct 2471
tgcttgctt gctatttaca ccacaaaggaa aaaagctgca ctgctataca agaaaattat 2531
5 ggaaaaatata tctgtAACCT ttataagtag gcataacagt tataatcata acataactgtt 2591
tttcttact ccacacaggc atagagtgtc tgctattaat aactatgctc aaaaattgtg 2651
10 taccttagc ttttaattt gtaaagggtt taataaggaa tatttgatgt atagtcctt 2711
gactagagat cataatcagc cataccacat ttgttagaggt tttacttgct ttaaaaaacc 2771
tcccacacct cccccctgaac ctgaaacata aaatgaatgc aattgttgtt gttaacttgt 2831
15 ttattgcagc ttataatggc tacaataaa gcaatagcat cacaatttc acaaataaag 2891
cattttttc actgcattct agttgtggc tgtccaaact catcaatgtt tcttatcatg 2951
20 tctggatccc cgggtaccct ctagagcgaa ttaattcact ggccgtcggt ttacaacgtc 3011
gtgactgggaa aaaccctggc gttacccaaac ttaatcgct tgcagcacat cccccttcg 3071
ccagctggcg taatagcgaa gaggcccgc cgcgcgc ttcacacag ttgcgcagcc 3131
25 tgaatggcga atggcgcctg atgcggattt ttctccttac gcatctgtc ggtatttcac 3191
accgcataatg gtgcactctc agtacaatct gctctgtatgc cgcatagttt agccagcccc 3251
30 gacacccgccc aacacccgct gacgcgcctt gacgggctt tctgctcccg gcatccgctt 3311
acagacaagc tgtgaccgtc tccggagct gcatgtgtca gaggtttca cgcgcacac 3371
cgaaacgcgc gagacgaaag ggggggtacc agcttcgttag ctagaacatc atgttctggg 3431
35 atatcagctt cgtagctaga acatcatgtt ctggtaaaaa cctcgtata cgccatattt 3491
tataaggtaa tgtcatgata ataatggttt ctttagacgtc aggtggcaact ttccgggaa 3551
40 atgtgcgcgg aacccttattt tgtttatttt tctaaataca ttcaaataatg tatccgctca 3611
tgagacaata accctgataa atgcttcaat aatattgaaa aaggaagagt atgagtattc 3671
aacatttccg tgtgcgcctt attccctttt ttgcggcatt ttgccttcct gttttgctc 3731
45 acccagaaac gctggtgaaa gtaaaagatg ctgaagatca gttgggtgca cgagtgggtt 3791
acatcgaact ggatctcaac agcggtaaag tccttgagag ttttcgcggcc gaagaacgtt 3851
50 ttccaatgat gagcactttt aaagttctgc tatgtggcgc ggtattatcc cgtattgacg 3911
ccgggcaaga gcaactcggt cgccgcatac actattctca gaatgactt gttgagttact 3971
caccagtcac agaaaagcat cttacggatg gcatgacagt aagagaattha tgcagtgtc 4031
55 ccataaccat gagtgataac actgcggcca acttacttct gacaacgatc ggaggaccga 4091
aggagctaac cgctttttt cacaacatgg gggatcatgt aactcgctt gatcggtggg 4151
60 aaccggagct gaatgaagcc ataccaaacg acgagcgtga caccacgatg cctgttagcaa 4211
tggcaacaac gttgcgcaaa ctattaaactg gcgaactact tactctagct tcccgcaac 4271

aattaataga ctggatggag gcggataaaag ttgcaggacc acttctgcgc tcggcccttc 4331
cggtggctg gtttattgct gataaatctg gagccgtga gcgtgggtct cgcgttatca 4391
5 ttgcagcact gggccagat ggtaagccct cccgtatcgt agttatctac acgacgggga 4451
gtcaggcaac tatggatgaa cgaaatagac agatcgctga gataggtgcc tcactgatta 4511
10 agcattggta actgtcagac caagttact catataact ttagattgat taaaacttc 4571
attttaatt taaaaggatc taggtgaaga tccttttga taatctcatg accaaaatcc 4631
cttaacgtga gtttcgttc cactgagcgt cagaccccgt agaaaagatc aaaggatctt 4691
15 cttgagatcc ttttttctg cgcgtaatct gctgcttgc aaaaaaaaaa ccaccgctac 4751
cagcggtggt ttgttgccg gatcaagagc taccaactct ttttccgaag gtaactggct 4811
20 tcagcagagc gcagatacca aatactgttc ttcttagtcta gccgtagttt ggcaccact 4871
tcaagaactc tgttagcacccg cctacatacc tcgctctgct aatcctgtta ccagtggctg 4931
ctgccagtgg cgataagtgc tgcgttaccg ggttggactc aagacgatag ttaccggata 4991
25 aggccgcagcg gtcgggctga acgggggggtt cgtgcacaca gcccagctt gagcgaacga 5051
cctacaccga actgagatac ctacagcgtg agctatgaga aagcgcacag cttccgaag 5111
30 ggagaaaggc ggacaggtat ccggtaagcg gcagggtcgg aacaggagag cgcacgaggg 5171
agcttccagg gggaaacgcc tggtatctt atagtcctgt cgggttcgc cacctctgac 5231
ttgagcgtcg attttgtga tgctcgtcag gggggcggag cctatgaaa aacgccagca 5291
35 acgcggcctt ttacggttc ctggcctttt gctggccttt tgctcacatg ttcttcctg 5351
cgatatcccc tgattctgtg gataaccgtt ttaccgcctt tgagtgagct gataccgctc 5411
40 gccgcagccg aacgaccgag cgcagcgtg cagtgagcga ggaagcggaa gagcgcaccaa 5471
tacgcaaacc gcctctcccc gcgcgttggc cgattcatta atgcagctgg cacgacaggt 5531
ttcccgactg gaaagcgggc agtgagcgcgca acgcaattaa tgtgagtttgc ctcactcatt 5591
45 aggcacccca ggcttacac tttatgcttc cggctcgtat gttgtgtgga attgtgagcg 5651
gataacaatt tcacacagga aacagctatg accatgatta cgccaaagctc tctagagctc 5711
50 tagagctcta gagctctaga gagcttgcgt gcctgcaggt cg 5753

<210> 2
<211> 461
<212> PRT
55 <213> Artificial Sequence
<223> Description of Artificial Sequence: vector pTGF36
<400> 2
Met Gln Arg Val Asn Met Ile Met Ala Glu Ser Pro Gly Leu Ile Thr
60 1 5 10 15

	Ile Cys Leu Leu Gly Tyr Leu Leu Ser Ala Glu Cys Thr Val Phe Leu			
	20	25	30	
5	Asp His Glu Asn Ala Asn Lys Ile Leu Asn Arg Pro Lys Arg Tyr Asn			
	35	40	45	
	Ser Gly Lys Leu Glu Glu Phe Val Gln Gly Asn Leu Glu Arg Glu Cys			
	50	55	60	
10	Met Glu Glu Lys Cys Ser Phe Glu Glu Ala Arg Glu Val Phe Glu Asn			
	65	70	75	80
	Thr Glu Arg Thr Thr Glu Phe Trp Lys Gln Tyr Val Asp Gly Asp Gln			
	85	90	95	
15	Cys Glu Ser Asn Pro Cys Leu Asn Gly Gly Ser Cys Lys Asp Asp Ile			
	100	105	110	
20	Asn Ser Tyr Glu Cys Trp Cys Pro Phe Gly Phe Glu Gly Lys Asn Cys			
	115	120	125	
	Glu Leu Asp Val Thr Cys Asn Ile Lys Asn Gly Arg Cys Glu Gln Phe			
	130	135	140	
25	Cys Lys Asn Ser Ala Asp Asn Lys Val Val Cys Ser Cys Thr Glu Gly			
	145	150	155	160
	Tyr Arg Leu Ala Glu Asn Gln Lys Ser Cys Glu Pro Ala Val Pro Phe			
	165	170	175	
30	Pro Cys Gly Arg Val Ser Val Ser Gln Thr Ser Lys Leu Thr Arg Ala			
	180	185	190	
35	Glu Thr Val Phe Pro Asp Val Asp Tyr Val Asn Ser Thr Glu Ala Glu			
	195	200	205	
	Thr Ile Leu Asp Asn Ile Thr Gln Ser Thr Gln Ser Phe Asn Asp Phe			
	210	215	220	
40	Thr Arg Val Val Gly Gly Glu Asp Ala Lys Pro Gly Gln Phe Pro Trp			
	225	230	235	240
	Gln Val Val Leu Asn Gly Lys Val Asp Ala Phe Cys Gly Gly Ser Ile			
	245	250	255	
45	Val Asn Glu Lys Trp Ile Val Thr Ala Ala His Cys Val Glu Thr Gly			
	260	265	270	
50	Val Lys Ile Thr Val Val Ala Gly Glu His Asn Ile Glu Glu Thr Glu			
	275	280	285	
	His Thr Glu Gln Lys Arg Asn Val Ile Arg Ile Ile Pro His His Asn			
	290	295	300	
55	Tyr Asn Ala Ala Ile Asn Lys Tyr Asn His Asp Ile Ala Leu Leu Glu			
	305	310	315	320
	Leu Asp Glu Pro Leu Val Leu Asn Ser Tyr Val Thr Pro Ile Cys Ile			
	325	330	335	
60	Ala Asp Lys Glu Tyr Thr Asn Ile Phe Leu Lys Phe Gly Ser Gly Tyr			
	340	345	350	

Val Ser Gly Trp Gly Arg Val Phe His Lys Gly Arg Ser Ala Leu Val
 355 360 365

5 Leu Gln Tyr Leu Arg Val Pro Leu Val Asp Arg Ala Thr Cys Leu Arg
 370 375 380

Ser Thr Lys Phe Thr Ile Tyr Asn Asn Met Phe Cys Ala Gly Phe His
 385 390 395 400

10 Glu Gly Gly Arg Asp Ser Cys Gln Gly Asp Ser Gly Gly Pro His Val
 405 410 415

Thr Glu Val Glu Gly Thr Ser Phe Leu Thr Gly Ile Ile Ser Trp Gly
 420 425 430

Glu Glu Cys Ala Met Lys Gly Lys Tyr Gly Ile Tyr Thr Lys Val Ser
 435 440 445

20 Arg Tyr Val Asn Trp Ile Lys Glu Lys Thr Lys Leu Thr
 450 455 460

<210> 3
 25 <211> 78
 <212> DNA
 <213> Homo sapiens

<400> 3
 30 ggggtaccag cttcgtagct agaacatcat gttctggat atcagcttcg tagctagaac 60
 atcatgttct ggtacccc 78

<210> 4
 35 <211> 78
 <212> DNA
 <213> Homo sapiens

<400> 4
 40 ggggtaccag aacatgatgt tctagctacg aagctgatat cccagaacat gatgttctag 60
 ctacgaagct ggtacccc 78

<210> 5
 45 <211> 19
 <212> DNA
 <213> Homo sapiens

<400> 5
 50 agcttgacct cgagcaagc 19

<210> 6
 55 <211> 19
 <212> DNA
 <213> Homo sapiens

<400> 6
 60 ggccgcgttgc tcgaggta 19

5 <210> 7
 <211> 43
 <212> DNA
 <213> Homo sapiens
5 <400> 7
 ggaattccgc aaaggttatg cagcgcgtga acatgatcat ggc 43

10 <210> 8
 <211> 39
 <212> DNA
 <213> Homo sapiens
15 <400> 8
 cgcgatcca ttaagtgagc tttgttttt ccttaatcc 39

20 <210> 9
 <211> 26
 <212> DNA
 <213> Homo sapiens
25 <400> 9
 cgaggatcca gtcgtcatga ctgagc 26

30 <210> 10
 <211> 41
 <212> DNA
 <213> Homo sapiens
35 <400> 10
 gcagaattca ttataaaaac tcaagacctc ataatcctga c 41

40 <210> 11
 <211> 20
 <212> DNA
 <213> Homo sapiens
45 <400> 11
 ctcctcgggg tcgaccctgg 20

50 <210> 12
 <211> 20
 <212> DNA
 <213> Homo sapiens
55 <400> 12
 ccagggtcga ccccgaggag 20

60 <220>
 <223> Description of Artificial Sequence: vector pTGF53

<400> 13

	cgcgttgaca	ttgattattt	actagttattt	aatagaatc	aattacgggg	tcattagttc	60
	ataggccata	tatggagttc	cgcgttacat	aacttacggt	aatggccc	cctggctgac	120
5	cgcggcaacga	cccccccca	ttgacgtcaa	taatgacgt	tgttccata	gtaacgcca	180
	tagggactt	ccattgacgt	caatgggtgg	agtatttacg	gtaaaactgcc	cacttggcag	240
	tacatcaagt	gtatcatatg	ccaagtacgc	cccctattga	cgtcaatgac	ggttaaatggc	300
	ccgcctggca	ttatgcccag	tacatgacct	tatgggactt	tcctacttgg	cagtagatct	360
10	acgtatttagt	catcgctatt	accatgggtga	tgcgggtttt	gcagtagatc	aatgggcgtg	420
	gatagcgggt	tgactcacgg	ggatttccaa	gtctccaccc	cattgacgtc	aatgggagtt	480
	tgtttggca	caaaaatcaa	cgggactt	caaaatgtcg	taacaactcc	gccccattga	540
	cgcggatggg	cggtaggcgt	gtacgggtgg	aggcttatat	aagcagagct	ctctggctaa	600
	ctagagaacc	cactgtttac	tggcttatcg	aaattaatac	gactcaat	agggagaccc	660
15	aagcttgcat	gccaattccg	caaaagggtt	gcagcgcgtg	aacatgtca	tggcagaatc	720
	accaggcctc	atcaccatct	gccttttagg	atatctact	agtctgtaa	gtacagttt	780
	tcttgcacat	gaaaacgcca	acaaaattct	gaatcgccca	aagaggata	attcaggtaa	840
	attggaaagag	tttgttcaag	ggaaccttga	gagagaatgt	atggaagaaa	agtgtagttt	900
	tgaagaagca	cgagaagttt	ttgaaaacac	tgaaagaaca	actgaattt	ggaagcagta	960
20	tgttgcacat	gatcgtgtg	agtccaaatcc	atgtttaaat	ggcggcagtt	gcaaggatga	1020
	cattaattcc	tatgaatgtt	ggtgtccctt	tggatttga	ggaaagaact	gtgaattaga	1080
	tgttgcacat	aacattaaga	atggcagatg	cgagcagttt	tgtaaaaata	gtgctgataa	1140
	caagggtgggt	tgctcctgt	ctgagggata	tcgacttgc	gaaaaccaga	agtctgtga	1200
	accagcagtg	ccatttccat	gtggaagaggt	ttctgtttca	caaacttcta	agtcacccg	1260
25	tgctgagact	gttttccctg	atgtggacta	tgtaaaattct	actgaagctg	aaaccatttt	1320
	ggataacatc	actcaaagca	cccaatcatt	taatgacttc	actcgggtt	ttggtgagaa	1380
	agatgcca	ccaggtcaat	tcccttggca	ggttgtttt	aatggtaaag	ttgtatgcatt	1440
	ctgtggggc	tctatcgta	atgaaaaatg	gattgttaact	gtgcggcact	gtgttgaac	1500
	tgtgtttaaa	attacagt	tcgcagggt	acataatatt	gaggagacag	aacatacaga	1560
	gcaaaaagcg	aatgtgattc	gaattattcc	tcaccacaa	tacaatgcag	ctattaataa	1620
30	gtacaaccat	gacattgccc	ttctgttgc	ggacgaaccc	ttagtgcata	acagctacgt	1680
	tacacctatt	tgcattgctg	acaaggaata	cacaacatc	tccctcaat	ttggatctgg	1740
	ctatgttaat	ggctgggaa	gagtcttca	caaaggggaga	tcagcttag	ttttcagta	1800
	ccttagagtt	ccacttgc	accgagccac	atgtcttgc	tctacaaatg	tcaccatcta	1860
	taacaacatg	ttctgtgc	gcttccatga	aggaggtaga	gattcatgtc	aaggagatag	1920
35	tgggggaccc	catgttact	aagtggaaagg	gaccagttt	ttaactggaa	ttattagct	1980
	gggtgaagag	tgtgcataat	aaggcaata	tggaaatata	accaaggat	cccggtatgt	2040
	caactggatt	aaggaaaaaa	caaagctcac	ttaatggat	cggtcgagcg	gccgcgactc	2100
	tactagagga	tctttgtgaa	ggaaccttac	ttctgtgg	tgacataatt	ggacaaacta	2160
	cctacagaga	tttaaagctc	taaggtaaat	ataaaaatttt	taagtgtata	atgtgttaaa	2220
40	ctactgattc	taatttgc	tgtatttt	attccaaacct	atggaaactg	tgaatggag	2280
	cagtgggtgg	atgcctttaa	tgaggaaaac	ctgttttgc	cagaagaaat	gccatctag	2340
	gatgtatgg	ctactgctg	ctctcaacat	tctactcctc	caaaaaagaa	gagaaaggta	2400
	gaagacccca	aggacttcc	ttcagaattt	ctaagtttt	tgagtcatgc	tgtgttagt	2460
	aatagaactc	ttgctgttgc	tgtattttac	accacaaagg	aaaaagctgc	actgctatac	2520
45	aagaaaattt	tggaaaaata	ttctgttaacc	tttataagta	ggcataacag	tataatcat	2580
	aacataactgt	tttttcttac	tccacacagg	catagatgt	ctgttataa	taactatgt	2640
	caaaaattgt	gtacctttag	cttttaatt	tgtaaagggg	ttaataagga	atatttgc	2700
	tatagtgcct	tgactagaga	tcataatcag	ccataccaca	ttttagagg	tttacttgc	2760
50	tttaaaaaac	ctccccacacc	tccccctgaa	cctgaaacat	aaaatgaatg	caattgtt	2820
	tgttaacttgc	tttatttgc	tttataatgg	ttacaatata	agcaatagca	tcacaaat	2880
	cacaataaaa	gcatttttt	cactgcattc	tagttgtgt	ttgtccaaac	tcatcaatgt	2940
	atcttataat	gtctggatcc	ccggggggta	ccagcttgc	agctagaaca	tcatgttct	3000
	ggatatacg	ttcgttagct	gaacatcatg	ttctggtacc	cccgctctag	agcgaattaa	3060
55	ttcactggcc	gtcgttttac	aacgtcgta	ctggggaaac	cctggcgta	cccaacttaa	3120
	tcgccttgc	gcacatcccc	ctttcgccag	ctggcgtaat	agcgaagagg	cccgacccga	3180
	tcgccttcc	caacagttgc	gcagcctgaa	tggcgaatgg	cgcctgatgc	ggtattttct	3240
	ccttacgc	ctgtgcggta	tttccacacc	catatggtgc	actctcagta	caatctgctc	3300
	tgtatggc	tagttaa	agccccgaca	cccgccaaaca	cccgctgacg	cgccctgacg	3360
	ggcttgc	ctccccggat	ccgcttacag	acaagctgt	accgtctccg	ggagctgcat	3420
60	gtgtcagagg	ttttcaccgt	catcaccgaa	acgcgcgaga	cgaaaggcgc	gggttaccaga	3480
	acatgtatgtt	ctagctacga	agctgatatac	ccagaacatg	atgttctagc	tacgaagctg	3540
	gtacccggc	ctcggtatac	gccttatttt	ataggttaat	gtcatgataa	taatggttt	3600
	ttagacgtca	ggtggcactt	ttcggggaaa	tgtgcgcgga	acccctattt	gtttattttt	3660

	ctaaatacat tcaaatatgt atccgctcat gagacaataa ccctgataaa tgcttcaata	3720
	atattgaaaa aggaagagta tgagtatca acatttcgt gtcgcctta ttccctttt	3780
	tgcggcatt tgccttcctg ttttgctca cccagaaacg ctggtaaaag taaaagatgc	3840
5	tgaagatcg ttgggtgcac gagtgggta catgaactg gatctaaca gcggtaagat	3900
	ccttgagagt ttgcctcccg aagaacgtt tccaatgtatg agcaacttta aagttctgt	3960
	atgtggcgcg gtatataccc gtattgacgc cggcaagag caactcggtc gccgcataca	4020
	ctattctcg aatgacttgg ttgagtactc accagtca aaaaagcatc ttacggatgg	4080
	catgacagta agagaattat gcagtgctgc cataaccatg agtgataaca ctgcggccaa	4140
10	cttacttctg acaacgatcg gaggaccgaa ggagctaacc gcttttgc acaacatggg	4200
	gatcatgtg actcgctt atcggttggg accggagctg aatgaagcca taccaaacga	4260
	cgagcgtgac accacgatgc ctgtagcaat ggcaacaacg ttgcgc当地 tattaactgg	4320
	cgaactactt actctagctt cccggcaaca attaatacg tggatggagg cgatataaag	4380
	tgcaggacca cttctgcgtc cggcccttcc ggctggctgg tttattgtcg ataaatctgg	4440
15	agccggtagg cgtgggtctc gcggtatcat tgcaactg gggccatgt gtaagccctc	4500
	ccgtatcgta gttatctaca cgacggggag tcaggcaact atggatgaac gaaatagaca	4560
	gatcgctgag ataggcgct cactgattaa gcattggtaa ctgtc当地 aactgtct	4620
	atataatactt tagattgatt taaaactca ttttaattt aaaaggatct aggtgaagat	4680
	ccttttgcgat aatctcatga cccaaatccc ttaacgttag tttcgttcc actgagcgtc	4740
20	agaccccgta gaaaagatca aaggatctt ttgagatctt tttttctgc gcgtaatctg	4800
	ctgcttgcaa aaaaaaaaaac caccgctacc agcgggtggtt tggccggg atcaagagct	4860
	accaactctt ttccgaagg taactggctt cagcagagcg cagataccaa atactgtct	4920
	tctagtgttag ccgttagttt gcccaccactt caagaactct gtagcaccgc ctacataacct	4980
25	cgcctctgcta atccgttac cagtggtctc tgccagtgcc gataagtctg gtcttaccgg	5040
	gttggactca agacgatagt tacggataag ggc当地 gggctgaac ggggggttcg	5100
	tgcacacagg ccagcttggg gcaacgacc tacaccgaac tgagataacct acagcgttag	5160
	ctatgagaaaa ggc当地 cgc当地 agaaaggccgg acaggatattc ggtaagcggc	5220
	agggtcgaaa caggagagcg cacgaggag ctccagggg gaaacgc当地 gtatctttat	5280
	agtcctgtcg gtttgc当地 cctctgactt gagctcgat tttgtgatg ctcgtc当地 5340	5340
30	ggcggagcc tatggaaaaa cgc当地 cgc当地 tacggttcc tacggttcc ggc当地 5400	5400
	tgccttttgc当地 ctcacatgtt ctttctgctg ttatccccctg attctgtgg taaccgtatt	5460
	accgc当地 agtgagctga taccgctcg cgccggaa cgaccgagcg cagc当地 5520	5520
	gtgagcgagg aaggaaaga ggc当地 cgc当地 cgccaaaccgc ctctccccgc gc当地 5580	5580
	attcattaaat gcagctggca cgacaggctt cccgacttgg aagcggc当地 tgagc当地 5640	5640
35	gcaattaaatg tgagttagct cactcattag gcaccccagg ct当地 acactt tatgcttccg	5700
	gctcgatgt tttgtggaaat tttgtggaa taacaattt acacaggaaa cagctatgac	5760
	catgattacg ccaagctctc tagagctta gagctctaga gctctagaga gcttgc当地 5820	5820
	cggggtacca gcttgc当地 tagaacatca ttttctggaa tatcagcttcc gtagctagaa	5880
	catcatgttc tggtaaaaaa gtcga 5905	
40	<210> 14	
	<211> 6052	
	<212> DNA	
	<213> Artificial Sequence	
45	<220>	
	<223> Description of Artificial Sequence: vector pTGF64	
	<400> 14	
50	cgcgttgaca ttgattattt actagttatt aatagtaatc aattacgggg tcattagttc 60 atagcccata tatggagttc cgcgttacat aacttacggt aaatggcccg cctggctgac 120 cgcccaacga cccccc当地 ttgacgtcaa taatgacgtt tttccata gtaacgccaa 180 tagggactt ccattgacgt caatgggg agtatttacg gtaaactgcc cacttggcag 240 tacatcaagt gtatcatatg ccaagtacgc cccctattga cgtcaatgac ggttaatggc 300	
55	ccgc当地 ttatgccc当地 tacatgaccc tatggactt tcctacttgg cagtagatct 360 acgtattatg catcgctatt accatggtga tggggttttgc gcaatgtcg aatgggc当地 420 gatagcggtt tgactcacgg ggatttccaa gtctccaccc cattgacgtc aatgggaggt 480 tggggcc当地 cccaaatcaa cgggacttcc cccaaatgtcg taacaactcc gccc当地 540	
60	cgggatggg cggtaggc当地 gtacgggtgg aggtcttat aagcagagct ctctggctaa 600 ctagagaacc cactgcttac tggcttacatc aaattaaatc gactcactat agggagacc 660 aagcttgc当地 gccaattccg cccaaatggg ttttgc gcaatgtcg aatgtc当地 720 accaggc当地 atcaccatct gc当地 atatctactc agtgc当地 780	

	tcttgatcat	aaaaacgcca	acaaaattct	gaatcgccca	aagaggata	attcaggtaa	840
	atggaaagag	tttgcataag	gaaaccttga	gagagaatgt	atggaaagaaa	agttagtgtt	900
	tgaagaagca	cgagaagttt	ttgaaaacac	tgaaagaaca	actgaatttt	ggaagcagta	960
5	tgttgatgga	gatcgtgtg	agtccaatcc	atgtttaat	ggcggcagtt	gcaaggatga	1020
	cattaattcc	tatgaatgtt	ggtgtccctt	tggattgaa	gaaaagaact	gtgaattaga	1080
	tgtAACATGT	aacattaaga	atggcagatg	cgagcagttt	tgtaaaata	gtgctgataa	1140
	caagggtgtt	tgctcgtt	ctgagggata	tcgacttgc	aaaaaccaga	agtccctgtg	1200
10	accagcagtg	ccatttccat	gtggaaaggt	ttctgtttca	caaactctca	agtcacccg	1260
	tgttgagact	gttttcctg	atgtggacta	tgtaaaattct	actgaagctg	aaaccatttt	1320
	ggataaacatc	actcaaagca	cccaatcatt	taatgacttc	actcgggtt	ttgggggaga	1380
	agatccaaa	ccaggtcaat	tccttggca	ggttggtttgg	aatggtaaag	ttgatgcatt	1440
15	ctgtggaggc	tctatcgta	atgaaaaatg	gattgtact	gctgccact	gtgttgaac	1500
	tgggtttaaa	attacagtt	tcgcagggtg	acataatatt	gaggagacag	aacatacaga	1560
	gcaaaagcga	aatgtgattc	gaattattcc	tcaccacaac	tacaatgcag	ctattaataa	1620
20	gtacaaccat	gacattgccc	ttctggaact	ggacgaaccc	ttagtgcataa	acagctacgt	1680
	tacacctatt	tgcattgctg	acaaggaata	cacgaacatc	ttcctcaaata	ttggatctgg	1740
	ctatgttaat	ggctggggaa	gagtcttcca	caaaggaga	tcagctttag	ttcttcagta	1800
	ccttagagtt	ccacttggtg	accgagccac	atgtcttcga	tctacaaagt	tcaccatcta	1860
25	taacaacatg	ttctgtgctg	gcttccatga	aggaggtaga	gattcatgtc	aaggagata	1920
	tgggggaccc	catgttactg	aagtggaaagg	gaccagtttgc	ttaactggaa	ttattagctg	1980
	gggtgaagag	tgtgcata	aaggcaaata	tggatataat	accaaggat	cccggtatgt	2040
	caactggatt	aaggaaaaaa	caaagctcac	ttatggat	cggtcgagcg	gccgcgactc	2100
	tactagagga	tctttgtgaa	ggaaccttac	ttctgtgggt	tgacataattt	ggacaaacta	2160
30	cctacagaga	ttaaaagctc	taaggtaaat	ataaaaatttt	taagtgtata	atgtgttaaa	2220
	ctactgattc	taattgtttg	tgtatTTT	attccaaacct	atggaaactga	tgaatggag	2280
	cagtggtgg	atgcctttaa	tgaggaaaac	ctgttttgct	cagaagaaat	gccatctag	2340
	gatgtgagg	ctactgctg	ctctcaacat	tctactcctc	caaaaaagaa	gagaaggt	2400
	gaagacccca	aggacttcc	ttcagaatttgc	ctaagttttt	tgagtcatgc	tgtgttagt	2460
35	aatagaactc	ttgcttgctt	tgctatttac	accacaaagg	aaaaagctgc	actgctatac	2520
	aagaaaatta	tggaaaata	ttctgtaa	tttataagta	ggcataacag	ttataatcat	2580
	aacatactgt	ttttcttac	tccacacagg	catagagtgt	ctgctattaa	taactatgt	2640
	caaaaattgt	gtacctttag	tttttaattt	tgtaaagggg	ttaataagga	atatttgat	2700
	tatagtgcct	tgactagaga	tcataatcag	ccataccaca	ttttagagg	tttacttgc	2760
40	ttttaaaaaac	ctccccacacc	tccccctgaa	cctgaaacat	aaaatgaatg	caattgtt	2820
	tgttaacttg	tttattgcag	tttataatgg	ttacaatataa	agcaatagca	tcacaaattt	2880
	cacaataaaa	gcattttttt	cactgcattc	tagtgtgtt	ttgtccaaac	tcatcaatgt	2940
	atcttatcat	gtctggatcc	ccgggggggtt	ccagcttcgt	agctagaaca	tcatgttctg	3000
	ggatatcagc	ttctgtacta	gaacatcatg	ttctgttacc	ccccccttaga	gcaattaat	3060
	tcactggccg	tcgttttaca	acgtcgtgac	tggaaaacc	ctggcgttac	ccaaacttaat	3120
45	cgccttgcag	cacatcccc	tttcgcccac	tggcgtata	gcaagaggc	ccgcacccgat	3180
	cgccttccc	aacagttgcg	cagcctgaat	ggcgaatggc	ggggtaccag	cttcgttagt	3240
	agaacatcat	gttctggat	atcagcttc	tagctagaac	atcatgttct	ggtaccccg	3300
	ctgatgcgg	atttctct	tacgcatactg	tgcggtattt	cacaccgcat	atggtgca	3360
	ctcagtacaa	tctgctctg	tgccgcata	ttaagccagc	cccgacaccc	gccaacaccc	3420
50	gctgacgcgc	cctgacgggc	ttgtctgtc	ccggcatccg	ttacagaca	agctgtgacc	3480
	gtctccggga	gctgcata	tcaagggttt	tcaccgtcat	caccgaaacg	cgcgagacga	3540
	aaggggacca	gaacatgtat	ttcttagctac	gaagctgata	tcccaagaaca	tgtatgttct	3600
	gctacgaagc	tggtaccccg	cctcgtata	cgccttattt	tataggttaa	tgtcatgata	3660
	ataatggttt	tttagacgtc	aggtggact	tttccgggaa	atgtgcgcgg	aacccctattt	3720
55	tgtttatTTT	tctaaatata	ttcaaataat	tatccgctca	tgagacaata	accctgataa	3780
	atgttcaat	aatattgaaa	aaggaaaggt	atgagtattt	aacatttccg	tgtcgccctt	3840
	atccccttt	ttgcggat	ttgccttct	gtttttgtct	acccagaaac	gctggtgaaa	3900
	gtaaaaatgt	ctgaagatca	tttgggtgca	cgagttgggtt	acatcgaact	ggatctcaac	3960
	agcggtaaga	tccttggagat	ttttccccc	gaagaacgtg	ttccaaatgt	gagcactttt	4020
60	aaagtctgc	tatgtggcgc	ggtattatcc	cgtatttgc	ccgggcaga	gcaactcgg	4080
	cggccatatac	actattctca	gaatgacttgc	gttgagact	caccatgtcac	agaaaagcat	4140
	cttacggatg	gcatgacatgt	aagagaat	tgcagtgtct	ccataaccat	gagtgataac	4200
	actgcggcca	acttacttct	gacaacgatc	ggaggaccga	aggagctaac	cgttttttg	4260
	cacaacatgg	gggatcatgt	aactcgcc	gatcggtgg	aaccggagct	gaatgaagcc	4320
	ataccaaacc	acgagcgtg	caccacgt	cctgttagca	tggcaacaac	gttgcgc	4380
	ctattaactg	gcgaactact	tactctagat	tcccgccaa	aattaataga	ctggatggag	4440
	gcggataaaag	ttgcaggacc	acttctgcgc	tcggcccttcc	cggtggctg	gtttattgt	4500

5 gataaaatctg gagccggta gcgtgggtct cgccgttatca ttgcagcact ggggccagat 4560
 ggtaagccct cccgtatctg agttatctac acgacggga gtcaggcaac tatggatgaa 4620
 cgaatatacg agatcgctga gataggtgcc tcactgatta agcattggta actgtcagac 4680
 caagtttact catatatact ttagattgtat taaaacttc attttaatt taaaaggatc 4740
 10 taggtgaaga tccttttga taatctcatg accaaaatcc cttaacgtga gtttcgttc 4800
 cactgagcgt cagaccgggt agaaaaagatc aaaggatctt cttgagatcc ttttttctg 4860
 cgcgtaatct gctgcttgc aaaaaaaaaa ccaccgctac cagcgggtgt ttgttgccg 4920
 gatcaagagc taccaactct ttttccgaag gtaactggct tcagcagagc gcagatacca 4980
 aatactgtcc ttcttagtcta gccgttagtta ggcaccact tcaagaactc tgttagcaccg 5040
 15 cctacatacc tcgctctgt aatcctgtta ccagtggctg ctgccagtg cgataagtgc 5100
 tgtcttacccg ggttggactc aagacgatag ttacccgata aggccgcagcg gtcgggctga 5160
 acgggggggtt cgtgcacaca gcccagctg gagcgaacga cctacaccga actgagatac 5220
 ctacagcgtg agctatgaga aagcggccacg cttcccaag ggagaaaggc ggacaggtat 5280
 20 ccggtaaaggc gcagggtcgg aacaggagag cgcacgaggg agcttccagg gggaaacgc 5340
 tggtatcttt atagtcctgt cgggtttcgc caccctgtac ttgagcgtcg atttttgtga 5400
 tgctcgtcag gggggcggag cctatggaaa aacggcagca acgcggcctt ttacggttc 5460
 ctggcctttt gctggccttt tgctcacatg ttcttcctg cgttatcccc tgattctgtg 5520
 gataaccgtt ttaccgcctt tgtagttagct gataccgtc gccgcagccg aacgaccgag 5580
 25 cgcaagcagt cagttagcga ggggtaccag aacatgatgt tctagctacg aagctgatat 5640
 cccagaacat gatgttctag ctacgaagct ggtacccccc cggaaagagcg cccaaatacgc 5700
 aaaccgcctc tccccgcgc ttggccgatt cattaatgca gctggcacga caggttccc 5760
 gactggaaag cgggcagtga ggcacacgca attaatgtga gttagctcac tcattaggca 5820
 ccccaaggctt tacactttt gcttccggct cgtatgtgt gtggaaattgt gaggcgataa 5880
 caatttcaca cagggaaacag ctatgaccat gattacgca agctctctag agctctagag 5940
 30 ctcttagagct ctagagagct tgcatggccg ggtaccagct tcgttagctag aacatcatgt 6000
 tctggatat cagcttcgtt gctagaacat catttctgg taccggcgtc ga 6052

30 <210> 15
 <211> 4344
 <212> DNA
 <213> Artificial Sequence

35 <220>
 <223> Description of Artificial Sequence: vector pTGF67

40 <400> 15
 cgcgttgcata ttgatttattg actagttatt aatagtaatc aattacgggg tcattagttc 60
 atagccccata tatggagttc cgcgttacat aacttacggt aaatggcccg cctggctgac 120
 cgcacaacga ccccccggca ttgacgtcaa taatgacgtt tggtccata gtaacgcca 180
 tagggacttt ccattgacgt caatgggtgg agtatttacg gtaaaactgccc cacttggcag 240
 tacatcaagt gtatcatatg ccaagtacgc cccctattga cgtcaatgac ggttaatggc 300
 cccgctggca ttatgcccgg tacatgaccc ttatggactt tcctacttgg cagtagatct 360
 acgttagt catcgcttatt accatgggttga tgcggttttgc gcaatcatac aatgggcgtg 420
 45 gatacggtt tgactcggg ggatttccaa gtctccaccc cattgacgtc aatgggagtt 480
 tgtttggca caaaaatcaa cgggacttcc caaaaatgtcg taacaactcc gcccattga 540
 cgcaaatggg cggtagggct gtacgggtgg aggttataat aagcagagct ctctggctaa 600
 ctagagaacc cactgcttac tggcttatacg aatataatc gactcaatcctt agggagaccc 660
 aagcttgacc tcgagcaagc ggccgcgact ctactagagg atctttgtga aggaacctta 720
 50 cttctgtggc gtgacataat tggacaaact acctacagag atttaaagct ctaaggtaaa 780
 tataaaattt ttaagtgtat aatgtgtttaa actactgatt ctaattgttt gtgtatttt 840
 gattccaacc tatggaaactg atgaatggga gcagtgggtgg aatgccttta atgagggaaaa 900
 cctgtttgc tcagaagaaa tgccatctag tgatgtgag gctactgctg actctcaaca 960
 ttctactcct ccaaaaaaaa agagaaaaggt agaagacccc aaggacttcc cttcagaatt 1020
 55 gctaagttt ttgagtcattt ctgtgttttag taatagaact cttgcttgc ttgctattta 1080
 caccacaaag gaaaaagctg cactgctata caagaaaattt atggaaaaat attctgtAAC 1140
 ctttataatgtt aggcataaca gttataatca taacatactg tttttctta ctccacacag 1200
 gcatagagtg tctgcttataactatgtc tcaaaaaatgtg ttttacccatc gctttttat 1260
 ttgtaaagggtt gttaaatagg aatattttgtat gtatgtgcc ttgacttagag atcataatca 1320
 60 gccataccac attttagag gttttacttg cttaaaaaaa cctccacac ctccccctga 1380
 acctgaaaca taaaatgtat gcaattgttg ttgttaactt gtttattgtca gcttataatg 1440
 gttacaataa aagcaatagc atcacaatatt tcacaatataa agcattttt tcactgcatt 1500

ctagttgtgg tttgtccaaa ctcataatc tatcttatca tgtctggatc cccgggtacc 1560
 ctctagagcg aattaattca ctggccgtcg tttacaacg tcgtgactgg gaaaaccctg 1620
 gcgttaccca acttaatcg cttgcagcac atccccctt cgccagctgg cgtaatagcg 1680
 aagaggccc caccgatcg cttcccaac agttgcgcag cctgaatggc gaatggcgcc 1740
 5 ttagtgcgtt tttctccctt acgcataatc gcggtatttc acaccgcata tggtgactc 1800
 tcagtcataat ctgcgtcgat gcccataatc taagccagcc cgcacacccg ccaacacccg 1860
 ctgacgcgcc ctgcacggct tttctgcctt cggcatccgc ttacagacaa gctgtgaccg 1920
 tctccggag ctgcataatc cagaggttt caccgcata accgaaacgc gcgagacgaa 1980
 aggggggta ccagcttcgt agctagaaca tcatgttctg ggatatcgc ttcgttagcta 2040
 10 gaacatcatg ttctgttacc cccctcgta tacgcctatt tttatacggtt aatgtcatga 2100
 taataatggt ttcttagacg ttaggtggca ctttcgggg aaatgtgcgc ggaaccccta 2160
 tttgttatt tttctaaata cattcaaata tgtatccgc catgagacaa taaccctgtat 2220
 aaatgcttca ataataattga aaaaggaaga gtatgagtt tcaacatttc cgtgtcgccc 2280
 ttattccctt tttgcggca tttgccttc ctgttttgc tcacccagaa acgctggta 2340
 15 aagtaaaaga tgctgaagat cagttgggtg cacgagtggg ttacatcgaa ctggatctca 2400
 acagcggtaa gatccttgcg agttttcgcc cggaaagaacg tttccaatg atgagactt 2460
 ttaaagtctt gctatgtggc gcggattat cccgtattga cggccggcaaa gagcaactcg 2520
 gtcggccat acactattct cagaatgact tggttgagta ctcaccatgc acagaaaagc 2580
 20 atcttacgga tggcatgaca gtaagagaat tatgcagtgc tgccataacc atgagtgata 2640
 acactgcggc caacttactt ctgacaacga tcggaggacc gaaggagcta accgctttt 2700
 tgcacaacat gggggatcat gtaactcgcc ttgatcggtt ggaacccggag ctgaatgaag 2760
 ccatacaaa cggcggccgt gacaccacga tgcctgtacg aatggcaaca acgttgcgc 2820
 aactttaaac tggcgaacta cttaatctg cttccggca acaattaata gactggatgg 2880
 aggccgataa agttgcaggaa ccacttctgc gtcggccct tccggctggc tggttattt 2940
 25 ctgataaaatc tggagccgtt gaggctgggt ctcgcgttat cattgcacca ctggggccag 3000
 atgtaagcc ctcccgatc gtatgtatc acacgacggg gaggcggca actatggatg 3060
 aacgaaatag acagatcgct gagataggtt ctcactgtat taagcattgg taactgtca 3120
 accaagtttta ctcataatata ctttagatgg attttaaaact tcattttaa tttaaaagga 3180
 tctaggtgaa gatcctttt gataatctca tgaccaaaat cccttaacgt gagtttcgt 3240
 30 tccactgagc gtcagacccc gtagaaaaaaa tcaaaggatc ttctttagat ccttttttc 3300
 tgcgcgtaat ctgcgtctt caaacaaaaa aaccaccgtt accagcggtg gttgtttgc 3360
 cggatcaaga gctaccaact cttttccga aggttaactgg cttcagcaga ggcgacatac 3420
 caaataactgt tcttcttagt tagccgttagt cttcaagaac tctgttagcac 3480
 35 cgccctacata cctcgctctg ctaatccgtt taccagtggc tgctgcccgt ggcgataagt 3540
 cgtgtcttac cgggttggac tcaagacgt agttaccggta aacggcgcag cggtcgggct 3600
 gaacggggggg ttctgtgcaca cagccacgt tggagcgaac gacctacacc gaactgagat 3660
 acctacacgc tgagctatga gaaagcgcga cgctcccgaa agggagaaaag gccgacaggt 3720
 atccggtaag cggcagggtc ggaacaggag agcgcacggag ggagcttcca gggggaaacg 3780
 cctggatctt ttatgtctt gtcgggtttc gccacccctg acttgagctg cgtattttgc 3840
 40 gatgctcgta agggggccgg agcctatgaa aaaacgcacgg caacgcggcc ttttacgg 3900
 tcctggcctt ttctgtggct tttgtcaca tggtttcc tgcgttatacc cctgattctg 3960
 tggataaccg tattaccgc tttgagtttgc ctgataccgc tcgcccgcac cgaacgaccg 4020
 agcgcacgcg gtcagtgacg gaggaaagcc aagagcgcac aatacgcaaa ccgcctctcc 4080
 cccgcgcgtt gccgattcat taatgcacgt ggcacccgc gtttcccgac tgaaagcgg 4140
 45 gcagtgagcg caacgcattt aatgtgagtt agctactca ttaggcacccc caggcttac 4200
 actttatgtt tccggctctt atgttgcgtt gaaatgtgag cggataacaa ttacacacag 4260
 gaaacagcta tgaccatgt tacgccaacg tctctagatc tcttagagctc tagagctca 4320
 gagagcttgc atgcctgcg gtcg 4344

50 <210> 16
 <211> 4496
 <212> DNA
 <213> Artificial Sequence

55 <220>
 <223> Description of Artificial Sequence: vector pTGF82

60 <400> 16
 cgcgttgcata ttgattattt actagtttattt aatagtaatc aattacgggg tcattagttc 60
 atagccccata tatggatgtt cgcgttacat aacttacggt aatggcccg cttggctgac 120
 cgcccaacga ccccccggca ttgacgtcaa taatgacgtt tggtccata gtaacgcacaa 180

tagggacttt ccattgacgt caatgggtgg agtatttacg gtaaaactgcc cacttggcag 240
 tacatcaagt gtatcatatg ccaagtacgc cccctattga cgtcaatgac ggtaaaatggc 300
 cccgcctggca ttatgcccag tacatgacct tatgggactt tcctacttgg cagtagatct 360
 acgtatttagt catcgctatt accatggtga tgccgttttgc gcaagtacatc aatgggcgtg 420
 5 gatacggtt tgactcacgg ggatttccaa gtctccaccc cattgacgatc aatgggagtt 480
 tgggttggca cccaaatcaa cgggacttc caaaatgtcg taacaactcc gccccattga 540
 cgccaaatggg cggtaggcgt gtacgggtggg aggtctatat aagcagagct ctctggctaa 600
 cttagagaacc cactgcttac tggcttatcg aaattaatac gactcactat agggagaccc 660
 aagcttgacc tcgagcaagg ggccgcgact ctactagagg atctttgtga aggaaccta 720
 10 cttctgtggt gtgacataat tggacaaaact acctacagag atttaaagct ctaaggtaaa 780
 tataaaaattt ttaagtgtat aatgtgttaa actactgatt ctaattgttt gtgtatttta 840
 gattccaacc tatggaaactg atgaatggga gcagttgtgg aatgcctta atgaggaaaa 900
 cctgttttgc tcagaagaaa tgccatctag tgatgtatgg gctactgtg actctcaaca 960
 ttctactcct cccaaaaaaa agagaaaaggta aagagaccc aaggacttcc cttcagaatt 1020
 15 gctaagttt ttgagtcatg ctgtgttttag taatagaact cttgcttgct ttgctattta 1080
 caccacaaaag gaaaaagctg cactgctata caagaaaatt atggaaaaat attctgttaac 1140
 ctttataagt aggataaca gttataatca taacatactg tttttctta cttccacacag 1200
 gcatagatgt tctgcttata ataactatgc tcaaaaaattt tgtaacctta gcttttaat 1260
 ttgtaaaagggtttaataagg aatattttagt gtatagtgcc ttgactagag atcataatca 1320
 20 gccataccac attttagag gttttacttg cttttaaaaaa cttccacac cttccctgt 1380
 acctgaaaca taaaatgaat gcaattgttg ttgttaactt gtttattgca gttataatg 1440
 gtacaaata aagcaatagc atcacaaaatt tcacaaataa agcattttt tcactgcatt 1500
 ctatgttgg tttgtccaaa ctcataatg tatcttatca ttttgcgatc cccgggggggt 1560
 25 accagcttcg tagctagaac atcatgttct gggatatcg cttcgttagt aagAACatcat 1620
 gttctgttac cccccccttag agcgaattaa ttcaactggcc gtcgttttac aacgtcgtga 1680
 ctggggaaaac cctggcgta cccaaactta tcgccttgc gCACATCCC CTTCGCCAG 1740
 ctggcgtaat aegcaagagg cccgcaccca tcgccttcc caacagtgc gcaagctgaa 1800
 tggcgaatgg cgcctgatgc ggtatttct cttacgcatt ctgtgcgttac 1860
 30 catatggtgc actctcagta caatctgc tgcgtccgc tagttaagcc agccccgaca 1920
 cccgccaaca cccgctgacg cgccctgacg ggcttgtctg ctcccgcat ccgttacag 1980
 acaagctgtg accgtctccg ggagctgcatt gtgtcagagg ttttcaccgt catcaccgaa 2040
 acgcgcgaga cgaaagggcg gggtaccaga acatgatgtt ctagctacga agctgatatic 2100
 ccagaacatg atgttctagc tacgaagctg gtacccggc ctcgtgatac gcctatttt 2160
 35 ataggtaat gtcataatgtaa taatggttt ttagacgtca ggtggcactt ttccggggaaa 2220
 ttttgcgca accccattttt gtttattttt ctaaatacat tcaaataatgt atccgcctcat 2280
 gagacaataa ccctgataaa tgcttcaata atattgaaaa aggaagagta tgagtattca 2340
 acatttccgt gtcgcctta ttccctttt tgcggcattt tgccttctg tttttgctca 2400
 cccagaaacg ctggtaaaag taaaagatgc tgaagatcag ttgggtgcac gagtgggtta 2460
 catcgaaactg gatctcaaca gcggttaagat ctttgcgatc aagaacgttt 2520
 40 tccaaatgtg agcactttt aagttctgt atgtggcgcg gtattatccc gtattgacgc 2580
 cgggcaagag caactcggtc gccgcataca ctattctcg aatgacttgg ttgagtagtc 2640
 accagtccaca gaaaagcatc ttacggatgg catgacagta agagaattat gcaactgtgc 2700
 cataaccatg agtgataaca ctgcggccaa cttaatctg acaacgatcg gaggaccgaa 2760
 ggagcttaacc gctttttgc acaacatgg ggatcatgtt actcgccttgc atcggttggaa 2820
 45 accggagctg aatgaagcca taccaaacga cgacgtgcattt accacgatgc ctgtacat 2880
 ggcacacaacg ttgcgcacac tattaactgg cgaactactt actctagctt cccggcaaca 2940
 attaatagac tggatggagg cggataaaatg tgcaggacca cttctgcgtt cggcccttcc 3000
 ggctggctgg ttattgtcg ataaatctgg agccgttagt cgtgggtctc ggggtatcat 3060
 tgcagcactg gggccagatg gtaagccctc cgtatcgta gttatctaca cgacggggag 3120
 50 tcaggcaact atggatgaac gaaatagaca gatcgctgag ataggtgcct cactgattaa 3180
 gcatttggtaa ctgtcagacc aagtttactc atatatactt tagattgatt taaaacttca 3240
 ttttaattt aaaaggatct aggtgaagat ctttttgcattt aatctcatga cccaaatccc 3300
 ttaacgttag ttttgcgttcc actgagcgtc agaccccgta gaaaagatca aaggatcttc 3360
 ttgagatctt tttttctgc gcgtaatctg ctgcttgcattt aaaaaaaaaac caccgctacc 3420
 55 agccgtgggt tttttgcggg atcaagagct accaactttt tttccgaaagg taactggctt 3480
 caggcagacg cagataccaa atactgtct tctatgttag cctgttagttag gccaccactt 3540
 caagaactct gtagcaccgc ctacatactc cgctctgtca atcctgttac cagtggtctgc 3600
 tgccagttgc gataagtcgt gtcttaccgg gttggactca agacgatagt taccggataa 3660
 ggcgcagcgg tcgggctgaa cgggggggttc gtgcacacag cccagcttgg agcgaacgc 3720
 60 ctacaccgaa ctgagatacc tacagcgtga gctatgagaa acgcgcacgc ttcccgaaagg 3780
 gagaaggcgc gacaggatc cggtaagcgg cagggtcgaa acaggagagc gcacgaggaa 3840
 gtttccaggg gaaaacgcct ggtatctta tagtcgtc gggtttcgccc acctctgact 3900

tgacgttcggat tttttgtgat gctcgccagg gggggcggagc ctatggaaaa acgccagcaa 3960
 cggggccttt ttacgggtcc tggccttttgc gtcacatgt tctttcttc 4020
 gttatcccct gattctgtgg ataaccgtat taccgccttt gagtgagctg ataccgctcg 4080
 cccgagccga acgaccgagc gcagcgagtc agtgagcgag gaagcggaaag agcgccccat 4140
 5 acgcaaaccg cctctcccg cgcgttggcc gattcattaa tgca gctggc acgacagggt 4200
 tcccgaactgg aaagcgggca gtgagcgcaa cgcattaaat gtgagtttagc tcactcatta 4260
 ggcaccccaag gcttacact ttatgcttcc ggctcgatag ttgtgtggaa ttgtgagcg 4320
 ataacaattt cacacaggaa acagctatga ccatgattac gccaagctct ctagagctct 4380
 10 agagctctag agctctagag agcttgcattt ccggggtacc agcttcgttag ctagaacatc 4440
 atgttctggg atatcagctt ctagactaga acatcatgtt ctggtaaaaa ggtcga 4496

<210> 17
 <211> 4644
 <212> DNA
 15 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: vector pTGF95

<400> 17
 cgcgttgaca ttgattattt actagtattt aatagtaatc aattacgggg tcatttagttc 60
 atagcccata tatggagttc cgcgttacat aacttacggt aaatggcccg cctggctgac 120
 25 cgcccaacga ccccccggca ttgacgtcaa taatgacgtt tgccatccata gtaacgcca 180
 tagggacttt ccattgacgt caatgggtgg agtatttacg gtaaaactgcc cacttggcag 240
 tacatcaagt gtatcatatg ccaagtacgc cccctattga cgtcaatgac ggtaaatggc 300
 cccgcctggca ttatgcccag tacatgaccc tattggactt tcctacttgg cagtacatct 360
 acgtatttagt catcgctatt accatggtga tgccgttttg gcagtagatc aatgggcgtg 420
 30 gatagcgggt tgactcacgg ggatttccaa gtcctccacc cattgacgtc aatgggagtt 480
 tttttggca cccaaatcaa cgggactttc caaaatgtcg taacaactcc gccccattga 540
 cgcaaatggg cggtaggcgt gtacgggtgg aggtctataat aagcagagct ctctggctaa 600
 35 cttagagaacc cactgcttac tggcttatcg aaattaatac gactcaatc agggagaccc 660
 aagcttgacc tcgagcaagc ggccgcact ctactagagg atcttgtga aggaaccccta 720
 cttctgtgtt gtgacataat tggcaaaact acctacagag attaaagct ctaaggtaaa 780
 tataaaattt ttaagtgtat aatgtgtttaa actactgatt ctaattgttt gtgtatttt 840
 gattccaacc tatgaaactg atgaatggga gcagtggtg aatgccttta atgagggaaa 900
 cctgtttgc tcagaagaaa tgccatctag ttagatgatgag gctactgctg actctcaaca 960
 ttctactcct cccaaaaaaa agagaaaagg agaagacccc aaggacttcc ttccagaatt 1020
 40 gctaagttt ttgagtcattt ctgtgttttag taatagaact cttgcttgct ttgctattta 1080
 caccacaaag gaaaaagctg cactgctata caagaaaatt atggaaaaat attctgttaac 1140
 ctttataagt aggataaca gttataatca taacatactg tttttctta ctccacacag 1200
 gcatagagtg tctgttattt ataactatgc tccaaaaattt tgacccctta gcttttaat 1260
 ttgttaaagggt gttataaagg aatatttgcgtt gtatagtgc ttgactagag atcataatca 1320
 45 gccataccac atttgttagat gttttacttg cttttaaaaa cctccacac cttccctgt 1380
 acctgaaaca taaaatgaat gcaatttttg ttgttaactt gttattgtca gcttataatg 1440
 gtacaaaata aagcaatagc atcacaattt tcacaaaataa agcattttt tcactgcatt 1500
 ctatgtgtgg ttgtccaaa accagcttcg tagctagaac gtcgtttagtcc acacgtcgta 1560
 gttctgttac cccccccttag ctggggaaaac cctggcggtt ctcataatg tatcttataa 1620
 50 ctggggaaaac cctggcggtt ctggcgtaat agcgaagagg ttttttttttgc caacagtgc 1680
 tggcaatgg cgggttacca gtttgcgttcc ccccaacttac tcgccttgc gacatcccc 1740
 gtagctagaa catcatgtt tggtaaaaaa ctttttttttgc cccgggggggt 1800
 gtgcggattt tcacaccgca agcgttgcac ttcactggcc gtcgttttac aacgtcgta 1860
 55 gtaagccag cccggacacc ccccaacacc cgcgtgacgcg ccctgacggg ttgttctgt 1920
 cccggcatcc gtttacagac aagctgtgac cgttccggg agctgcattt gtcagagggt 1980
 ttccaccgtca tcaccgaaac ggcgcagacg aaagggttac cagaacatgatg ttttctgt 2040
 acgaagctga tatcccagaa catgttgcac tagctacgaa gctggtaccc cgcctcgta 2100
 tacgcctatt tttatagttt aatgtcatga taataatggt ttcttagacg tcaggtggca 2160
 60 cttttcgggg aatagtgcgc ggaaccccta tttttttatt tttctaaata cattcaata 2220
 tgatccgtt catgagacaa taaccctgtt aatgttca ataatattga aaaaggaaga 2280
 gtagactat tcaacatttc cgtgtcgccc ttattccctt ttttgcggca ttttgccttc 2340

ctgttttgc tcacccagaa acgctggta aagtaaaaaga tgctgaagat cagttgggtg 2520
 cacgagtggg ttacatcgaa ctggatctca acagcggtaa gatccttgag agtttcgcc 2580
 ccgaagaacg tttccaatg atgagcactt taaagttct gctatgtggc gcggtattat 2640
 cccgtattga cgccggcaa gagcaactcg gtcgcccgtt acactattct cagaatgact 2700
 5 tggtttagta ctcaccagtc acagaaaagc atcttacgga tggcatgaca gtaagagaat 2760
 tatgcagtgc tgccataacc atgagtgata acactgcggc caacttactt ctgacaacga 2820
 tcggaggacc gaaggagcta accgctttt tgccacaacat gggggatcat gtaactcgcc 2880
 ttgatcggtt ggaaccggag ctgaatgaag ccataccaaa cgacgacgt gacaccacga 2940
 tgcctgtacg aatggcaaca acgttgcgc aactattaac tggcgaacta cttactctag 3000
 10 ctccccggca acaataata gactggatgg aggccgataa agttgcagga ccacttctgc 3060
 gctggccct tccggctggc tggtttattt ctgataaato tggagccgtt gagcgtgggt 3120
 ctcgcgttat cattgcagca ctggggccag atgtaagcc ctcccgatc gtatgtatct 3180
 acacgacggg gagtcaggca actatggat aacaaatag acagatcgct gagataggtg 3240
 cctcaactgat taagcattgg taactgtcag accaagtta ctcataata ctttagattt 3300
 15 attaaaaact tcattttaa tttaaaagga tctaggtgaa gatcctttt gataatctca 3360
 tgaccaaaat cccttaacgt gagtttcgt tccactgagc gtcagacccc gtagaaaaaga 3420
 tcaaaggatc ttctttagat ctttttttc tgccgtaat ctgctgctt caaacaaaaaa 3480
 aaccaccgct accagcgggtt gtttgggttgc cgatcaaga gctaccaact cttttccga 3540
 20 agtaactgg cttcagcaga gcgcagatac caaatactgt cttcttagtg tagccgtatg 3600
 taggcccacca cttcaagaac tctgttagcac cgcctacata ctcgcctctg ctaatcctgt 3660
 taccagtggc tgctgccagt ggcgataagt cgtgttttac cgggttggac tcaagacgt 3720
 agttaccgga taaggcgcag cggtcgggctt gAACGGGGGGG ttcgtgcaca cagccagct 3780
 tggagcgaac gacctacacc gaactgagat acctacagcg tgagctatga gaaagcgc 3840
 25 cgcttcccga agggagaaag gcggacaggt atccggtaag cggcagggtc ggaacaggag 3900
 agcgcacgag ggagcttcca gggggaaacg cctggtatct ttatagtcct gtcgggtttc 3960
 gccacacctg acttgagcgt cgatttttgt gatgctcgtc agggggccgg agcctatgga 4020
 aaaacgccag caacggggcc ttttacgg tccggcett ttgctgcct ttgctcaca 4080
 ttttcttcc tgcgttatcc cctgatttc tggataaccg tattaccggc ttgagtgag 4140
 30 ctgataccgc tcgcccgcagc cgaacgaccg agcgcagcga gtcagtgagc gagggttacc 4200
 agaacatgat gttctagcta cgaagctgat atcccagaac atgatgttct agctacgaa 4260
 ctggtagcccc agcggaaagag cgcggaaatac gcaaaaccgcc tctcccccggc cgttggccga 4320
 ttcattaaatg cagctggcac gacaggtttc cgcactggaa agcggccagt gagcgcac 4380
 caattaatgt gagttagctc actcattagg caccggc tttacacttt atgcttccgg 4440
 35 ctcgtatgtt gtgtgaaatt gtgagcggat aacaatttca cacagggaaac agctatgacc 4500
 atgattacgc caagctctc agagctctag agctctagag ctctagagag cttgcattgc 4560
 ggggttaccag cttcgtatct agaacatcat gttctggat atcagcttcg tagctagaac 4620
 atcatgttct ggtaccccg tcga 4644

40 <210> 18
 <211> 933
 <212> PRT
 <213> Homo sapiens

45 <400> 18
 Met Thr Glu Leu Lys Ala Lys Gly Pro Arg Ala Pro His Val Ala Gly
 1 5 10 15

50 Gly Pro Pro Ser Pro Glu Val Gly Ser Pro Leu Leu Cys Arg Pro Ala
 20 25 30

Ala Gly Pro Phe Pro Gly Ser Gln Thr Ser Asp Thr Leu Pro Glu Val
 35 40 45

55 Ser Ala Ile Pro Ile Ser Leu Asp Gly Leu Leu Phe Pro Arg Pro Cys
 50 55 60

Gln Gly Gln Asp Pro Ser Asp Glu Lys Thr Gln Asp Gln Gln Ser Leu
 65 70 75 80

60 Ser Asp Val Glu Gly Ala Tyr Ser Arg Ala Glu Ala Thr Arg Gly Ala
 85 90 95

	Gly	Gly	Ser	Ser	Ser	Ser	Pro	Pro	Glu	Lys	Asp	Ser	Gly	Leu	Leu	Asp
							100		105					110		
5	Ser	Val	Leu	Asp	Thr	Leu	Leu	Ala	Pro	Ser	Gly	Pro	Gly	Gln	Ser	Gln
							115		120					125		
	Pro	Ser	Pro	Pro	Ala	Cys	Glu	Val	Thr	Ser	Ser	Trp	Cys	Leu	Phe	Gly
10							130		135				140			
	Pro	Glu	Leu	Pro	Glu	Asp	Pro	Pro	Ala	Ala	Pro	Ala	Thr	Gln	Arg	Val
							145		150				155			160
15	Leu	Ser	Pro	Leu	Met	Ser	Arg	Ser	Gly	Cys	Lys	Val	Gly	Asp	Ser	Ser
							165		170				175			
	Gly	Thr	Ala	Ala	Ala	His	Lys	Val	Leu	Pro	Arg	Gly	Leu	Ser	Pro	Ala
							180		185				190			
20	Arg	Gln	Leu	Leu	Leu	Pro	Ala	Ser	Glu	Ser	Pro	His	Trp	Ser	Gly	Ala
							195		200				205			
	Pro	Val	Lys	Pro	Ser	Pro	Gln	Ala	Ala	Ala	Val	Glu	Val	Glu	Glu	Glu
25							210		215				220			
	Asp	Gly	Ser	Glu	Ser	Glu	Glu	Ser	Ala	Gly	Pro	Leu	Leu	Lys	Gly	Lys
							225		230				235			240
30	Pro	Arg	Ala	Leu	Gly	Gly	Ala	Ala	Ala	Gly	Gly	Gly	Ala	Ala	Ala	Val
							245		250				255			
	Pro	Pro	Gly	Ala	Ala	Ala	Gly	Gly	Val	Ala	Leu	Val	Pro	Lys	Glu	Asp
							260		265				270			
35	Ser	Arg	Phe	Ser	Ala	Pro	Arg	Val	Ala	Leu	Val	Glu	Gln	Asp	Ala	Pro
							275		280				285			
	Met	Ala	Pro	Gly	Arg	Ser	Pro	Leu	Ala	Thr	Thr	Val	Met	Asp	Phe	Ile
40							290		295				300			
	His	Val	Pro	Ile	Leu	Pro	Leu	Asn	His	Ala	Leu	Leu	Ala	Ala	Arg	Thr
							305		310				315			320
45	Arg	Gln	Leu	Leu	Glu	Asp	Glu	Ser	Tyr	Asp	Gly	Gly	Ala	Gly	Ala	Ala
							325		330				335			
	Ser	Ala	Phe	Ala	Pro	Pro	Arg	Ser	Ser	Pro	Cys	Ala	Ser	Ser	Thr	Pro
							340		345				350			
50	Val	Ala	Val	Gly	Asp	Phe	Pro	Asp	Cys	Ala	Tyr	Pro	Pro	Asp	Ala	Glu
							355		360				365			
	Pro	Lys	Asp	Asp	Ala	Tyr	Pro	Leu	Tyr	Ser	Asp	Phe	Gln	Pro	Pro	Ala
55							370		375				380			
	Leu	Lys	Ile	Lys	Glu	Glu	Glu	Gly	Ala	Glu	Ala	Ser	Ala	Arg	Ser	
							385		390				395			400
60	Pro	Arg	Ser	Tyr	Leu	Val	Ala	Gly	Ala	Asn	Pro	Ala	Ala	Phe	Pro	Asp
							405		410				415			

	Phe Pro Leu Gly Pro Pro Pro Pro	Leu Pro Pro Arg Ala Thr Pro Ser
	420	425
	430	
5	Arg Pro Gly Glu Ala Ala Val Thr Ala Ala Pro Ala Ser Ala Ser Val	
	435	440
	445	
	Ser Ser Ala Ser Ser Ser Gly Ser Thr Leu Glu Cys Ile Leu Tyr Lys	
	450	455
	460	
10	Ala Glu Gly Ala Pro Pro Gln Gln Gly Pro Phe Ala Pro Pro Pro Cys	
	465	470
	475	480
15	Lys Ala Pro Gly Ala Ser Gly Cys Leu Leu Pro Arg Asp Gly Leu Pro	
	485	490
	495	
	Ser Thr Ser Ala Ser Ala Ala Ala Gly Ala Ala Pro Ala Leu Tyr	
	500	505
	510	
20	Pro Ala Leu Gly Leu Asn Gly Leu Pro Gln Leu Gly Tyr Gln Ala Ala	
	515	520
	525	
	Val Leu Lys Glu Gly Leu Pro Gln Val Tyr Pro Pro Tyr Leu Asn Tyr	
	530	535
	540	
25	Leu Arg Pro Asp Ser Glu Ala Ser Gln Ser Pro Gln Tyr Ser Phe Glu	
	545	550
	555	560
30	Ser Leu Pro Gln Lys Ile Cys Leu Ile Cys Gly Asp Glu Ala Ser Gly	
	565	570
	575	
	Cys His Tyr Gly Val Leu Thr Cys Gly Ser Cys Lys Val Phe Phe Lys	
	580	585
	590	
35	Arg Ala Met Glu Gly Gln His Asn Tyr Leu Cys Ala Gly Arg Asn Asp	
	595	600
	605	
	Cys Ile Val Asp Lys Ile Arg Arg Lys Asn Cys Pro Ala Cys Arg Leu	
	610	615
	620	
40	Arg Lys Cys Cys Gln Ala Gly Met Val Leu Gly Gly Arg Lys Phe Lys	
	625	630
	635	640
45	Lys Phe Asn Lys Val Arg Val Val Arg Ala Leu Asp Ala Val Ala Leu	
	645	650
	655	
	Pro Gln Pro Leu Gly Val Pro Asn Glu Ser Gln Ala Leu Ser Gln Arg	
	660	665
	670	
50	Phe Thr Phe Ser Pro Gly Gln Asp Ile Gln Leu Ile Pro Pro Leu Ile	
	675	680
	685	
	Asn Leu Leu Met Ser Ile Glu Pro Asp Val Ile Tyr Ala Gly His Asp	
	690	695
	700	
55	Asn Thr Lys Pro Asp Thr Ser Ser Ser Leu Leu Thr Ser Leu Asn Gln	
	705	710
	715	720
60	Leu Gly Glu Arg Gln Leu Leu Ser Val Val Lys Trp Ser Lys Ser Leu	
	725	730
	735	

Pro Gly Phe Arg Asn Leu His Ile Asp Asp Gln Ile Thr Leu Ile Gln
 740 745 750

5 Tyr Ser Trp Met Ser Leu Met Val Phe Gly Leu Gly Trp Arg Ser Tyr
 755 760 765

Lys His Val Ser Gly Gln Met Leu Tyr Phe Ala Pro Asp Leu Ile Leu
 770 775 780

10 Asn Glu Gln Arg Met Lys Glu Ser Ser Phe Tyr Ser Leu Cys Leu Thr
 785 790 795 800

Met Trp Gln Ile Pro Gln Glu Phe Val Lys Leu Gln Val Ser Gln Glu
 805 810 815

15 Glu Phe Leu Cys Met Lys Val Leu Leu Leu Asn Thr Ile Pro Leu
 820 825 830

20 Glu Gly Leu Arg Ser Gln Thr Gln Phe Glu Glu Met Arg Ser Ser Tyr
 835 840 845

Ile Arg Glu Leu Ile Lys Ala Ile Gly Leu Arg Gln Lys Gly Val Val
 850 855 860

25 Ser Ser Ser Gln Arg Phe Tyr Gln Leu Thr Lys Leu Leu Asp Asn Leu
 865 870 875 880

His Asp Leu Val Lys Gln Leu His Leu Tyr Cys Leu Asn Thr Phe Ile
 885 890 895

30 Gln Ser Arg Ala Leu Ser Val Glu Phe Pro Glu Met Met Ser Glu Val
 900 905 910

35 Ile Ala Ala Gln Leu Pro Lys Ile Leu Ala Gly Met Val Lys Pro Leu
 915 920 925

Leu Phe His Lys Lys
 930

40 <210> 19
 <211> 2970
 <212> DNA
 <213> Homo sapiens

45 <400> 19
 ctgaccagcg ccgcctccccc cggccccca cccaggaggt ggagatccct cccgtccagc 60
 cacattcaac acccacttcc tcctccctct gcccstatat tcccgaacc ccctccctct 120
 tccctttcc ctcctccctg gagacgggg aggagaaaaag gggagtccag tcgtcatgac 180
 tgagctgaag gcaaagggtc cccggctcc ccacgtggcg ggcggccgc cctccccga 240
 ggtcggtatcc ccactgctgt gtcccccagc cgcaggcccg ttcccgggga gccagacctc 300
 ggacaccttg cctgaagttt cggccatacc tattccctg gacgggtctac tcttccctcg 360
 gccctggccag ggacaggacc cttccgcaga aaagacgcag gaccaggact cgctgtcgga 420
 cgtggaggcgc gcatattcca gagctgaagc tacaagggt gctggggca gcagttctag 480
 55 tccccccagaa aaggacagcg gactgctgga cagtgtcttg gacacttgt tggccccc 540
 aggtcccggt cagaggcaac ccagccctcc cgcctgcgag gtcaccagct cttgggtgcet 600
 gtttggccccc gaactcccg aagatccacc ggctgcccc gccaccaggc ggtgttggtc 660
 60 cccgctcatcg agccggtccg ggtgcaaggt tggagacagc tccgggacgg cagctgcccc 720
 taaagtgtctg cccccggggcc tgcaccaggc ccggcagctg ctgctcccg cctctgagag 780
 ccctcactgg tccggggccc cagtgaagcc gtctccgcag gccgctgcgg tggagggtga 840
 ggaggaggat ggctctgagt ccgaggagtc tgccgggtccg ttctgaagg gcaaaccctcg 900
 ggctctgggt ggccggccgg ctggaggagg agccgcggct gtcggccgg gggccggcagc 960

	aggaggcgtc	gccctggtcc	ccaaggaaga	ttcccgttc	tcagcgccc	gggtcgccc	1020
	ggtggagcag	gacgcgccg	tggcgccccg	gcgcgtccccg	ctggccacca	cgtgtatgga	1080
5	tttcatccac	gtgcctatcc	tgcctctcaa	tcacgcctta	ttggcagccc	gaactcggca	1140
	gctgctggaa	gacgaaagt	acgacggcgg	ggccggggct	gccagcgct	ttgccccgccc	1200
	gcggagttca	ccctgtgcct	cgtccacccc	ggtcgctgta	ggcgacttc	ccgactgcgc	1260
	gtacccgccc	gacgccgagc	ccaaggacga	cgcgtaccct	ctctatacg	acttccagcc	1320
	gcccgctcta	aagataaaagg	aggaggagga	aggcgcggag	gcctccgcgc	gtccccgcg	1380
10	ttcttacatt	gtggccggtg	ccaaccccg	agccttccc	gatttcccgt	tggggccacc	1440
	gcccccgctg	ccgcccgcag	cgacccatc	cagacccggg	gaagcgcgg	tgacggccgc	1500
	acccggcagt	gcctcatgt	cgtctgcgtc	ctccctcggg	tcgaccctgg	atgtcatcc	1560
	gtacaaggcg	gaggggcgcc	cgcggccagca	ggggccgttc	gcccgcgcgc	cctgcaaggc	1620
	gccccggcg	agcggtgc	tgctcccg	ggacggcctg	ccctccac	ccgcctctgc	1680
15	cgccggccgc	ggggcggccc	ccgcgtctca	ccctgcactc	ggcctaacc	ggctcccgc	1740
	gctcggtac	caggccgcgg	tgctcaagg	gggcctgccc	caggttacc	ccgcctatatc	1800
	caactacctg	aggccggatt	cagaagccag	ccagagccca	caatacagct	tcgagtcat	1860
	acccagaag	atttgtttaa	tctgtggga	tgaagcatca	ggctgtcatt	atgggtgcct	1920
	tacctgtgg	agctgttaagg	tcttctttaa	gagggcaatg	gaagggcagc	acaactactt	1980
20	atgtgttga	agaaaatgact	gcatcggt	taaaatccgc	agaaaaaaact	gccagcatg	2040
	tcgcctttaga	aagtgtgtc	aggctggcat	ggtccttgg	gtcgaaaat	ttaaaaatgtt	2100
	caataaagt	agagttgt	gagcactg	tgctgttgct	ctcccac	cattggcg	2160
	tccaaatgaa	agccaagccc	taagccagag	attcacttt	tcaccagg	aagacataca	2220
	gttgatttca	ccactgatca	acctgttaat	gagcattgaa	ccagatgt	tctatgcagg	2280
25	acatgacaac	acaaaacctg	acacctccag	ttctttgt	acaagtctt	atcaactagg	2340
	cgagaggcaa	tttctttcag	tagtcaagt	gtctaaatca	ttgcccagg	ttcgaaactt	2400
	acatattgtat	gaccagataa	ctctcattca	gtattttgg	atgagctt	tgtgtttgg	2460
	tctaggatgg	agatcctaca	aacatgtca	tggcagatg	ctgtattttg	cacctgatct	2520
	aataactaaat	gaacagcgg	tgaaaagaaatc	atcattctat	tcattatgc	ttaccatgt	2580
30	gcagatccca	caggagttt	tcaagcttca	agttagccaa	gaagagg	tctgtatgaa	2640
	agtattgtt	tttcttaata	caatttctt	ggaaggctt	cgaagtca	cccaatgtt	2700
	ggagatgagg	tcaagctaca	tttagagat	catcaagg	attgg	ttgaaagg	2760
	agttgtgtcg	agtcacac	gtttctatca	acttacaaa	tttcttgata	acttgcatg	2820
	tctgtcaaa	caacttcatc	tgtactgctt	gaatacattt	atccag	cccggactgag	2880
	tgttgaattt	ccagaaatga	tgtctgaagt	tattgctgca	caattacca	agatattggc	2940
35	aggatggtg	aaacccttc	tcttcataa				2970

INTERNATIONAL SEARCH REPORT

In. National Application No
PCT/EP 00/01368

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7	C12N15/12	C12N15/57	C12N15/67	C12N15/85	C12N9/64
	C07K14/72.	C12Q1/68	A61K48/00		

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C12N C07K C12Q A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 94 28150 A (UNIV MCGILL) 8 December 1994 (1994-12-08) page 5, line 1 - line 11 page 6, line 34 -page 7, line 10 page 6, line 24 - line 28 page 10, line 20 - line 25 page 14, line 14 - line 19 claims 1-11 ---	1,2,6,7, 11,29,30 3-5,8,9
Y	-/-	

Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "S" document member of the same patent family

Date of the actual completion of the international search

6 June 2000

Date of mailing of the international search report

26/06/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl.
Fax: (+31-70) 340-3016

Authorized officer

Hornig, H

INTERNATIONAL SEARCH REPORT

Int. Application No
PCT/EP 00/01368

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	V. BOONYARATANAKORNKIT ET AL.: "High-mobility group chromatin proteins 1 and 2 functionally interact with steroid hormone receptors to enhance their DNA binding in vitro and transcriptional activity in mammalian cells" MOL. CELL. BIOL., vol. 18, no. 8, August 1998 (1998-08), pages 4471-4487, XP002139580 ASM WASHINGTON, DC, US cited in the application the whole document ---	1,2,7
X	WO 94 17182 A (RES INST OF THE PALO ALTO MEDI ;LEAVITT JOHN C (US)) 4 August 1994 (1994-08-04) page 16, line 30 - line 36 page 17, line 1 - line 3; claims 1-16 ---	1,2,6,7, 11,29,30
X	WO 93 20218 A (CONNAUGHT LAB ;FILMUS JORGE (CA); KLEIN MICHEL (CA)) 14 October 1993 (1993-10-14) the whole document ---	1,2,6,11
Y	WO 94 29471 A (GENETIC THERAPY INC) 22 December 1994 (1994-12-22) the whole document ---	3-5,8,9
A	WO 93 23431 A (BAYLOR COLLEGE MEDICINE) 25 November 1993 (1993-11-25) cited in the application the whole document ---	
A	BEATO M ET AL: "Transcriptional regulation by steroid hormones" STEROIDS: STRUCTURE, FUNCTION, AND REGULATION, US, ELSEVIER SCIENCE PUBLISHERS, NEW YORK, NY, vol. 61, no. 4, 1 April 1996 (1996-04-01), pages 240-251, XP004026583 ISSN: 0039-128X the whole document ---	
A	BEATO M: "GENE REGULATION BY STEROID HORMONES" CELL, US, CELL PRESS, CAMBRIDGE, MA, vol. 56, no. 3, 10 February 1989 (1989-02-10), pages 335-344, XP000051659 ISSN: 0092-8674 the whole document ---	
		-/-

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 00/01368

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>KURACHI S. ET AL: "Regulatory mechanism of human factor IX gene: Protein binding at the Leyden-specific region." BIOCHEMISTRY, (1994) 33/6 (1580-1591). , XP002139581 the whole document</p> <p>---</p>	
A	<p>CROSSLEY M. ET AL: "Recovery from hemophilia B Leyden: An androgen-responsive element in the factor IX promoter." SCIENCE, (1992) 257/5068 (377-379). , XP002139582 the whole document</p> <p>---</p>	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/EP 00/01368

Patent document cited in search report	Publication date	Patent family member(s)			Publication date
WO 9428150	A 08-12-1994	US 5512483 A			30-04-1996
		AU 6791894 A			20-12-1994
WO 9417182	A 04-08-1994	AU 6087694 A			15-08-1994
WO 9320218	A 14-10-1993	AU 3883393 A			08-11-1993
		BR 9306167 A			13-01-1998
		EP 0633941 A			18-01-1995
		FI 944451 A			26-09-1994
		JP 2701983 B			21-01-1998
		JP 7501456 T			16-02-1995
		NO 943610 A			30-11-1994
		US 5559027 A			24-09-1996
WO 9429471	A 22-12-1994	EP 0710288 A			08-05-1996
		JP 8511423 T			03-12-1996
		US 5935935 A			10-08-1999
WO 9323431	A 25-11-1993	US 5364791 A			15-11-1994
		AU 685054 B			15-01-1998
		AU 4241793 A			13-12-1993
		AU 6065198 A			02-07-1998
		CA 2135644 A			25-11-1993
		EP 0745121 A			04-12-1996
		JP 7509694 T			26-10-1995
		US 5935934 A			10-08-1999
		US 5874534 A			23-02-1999